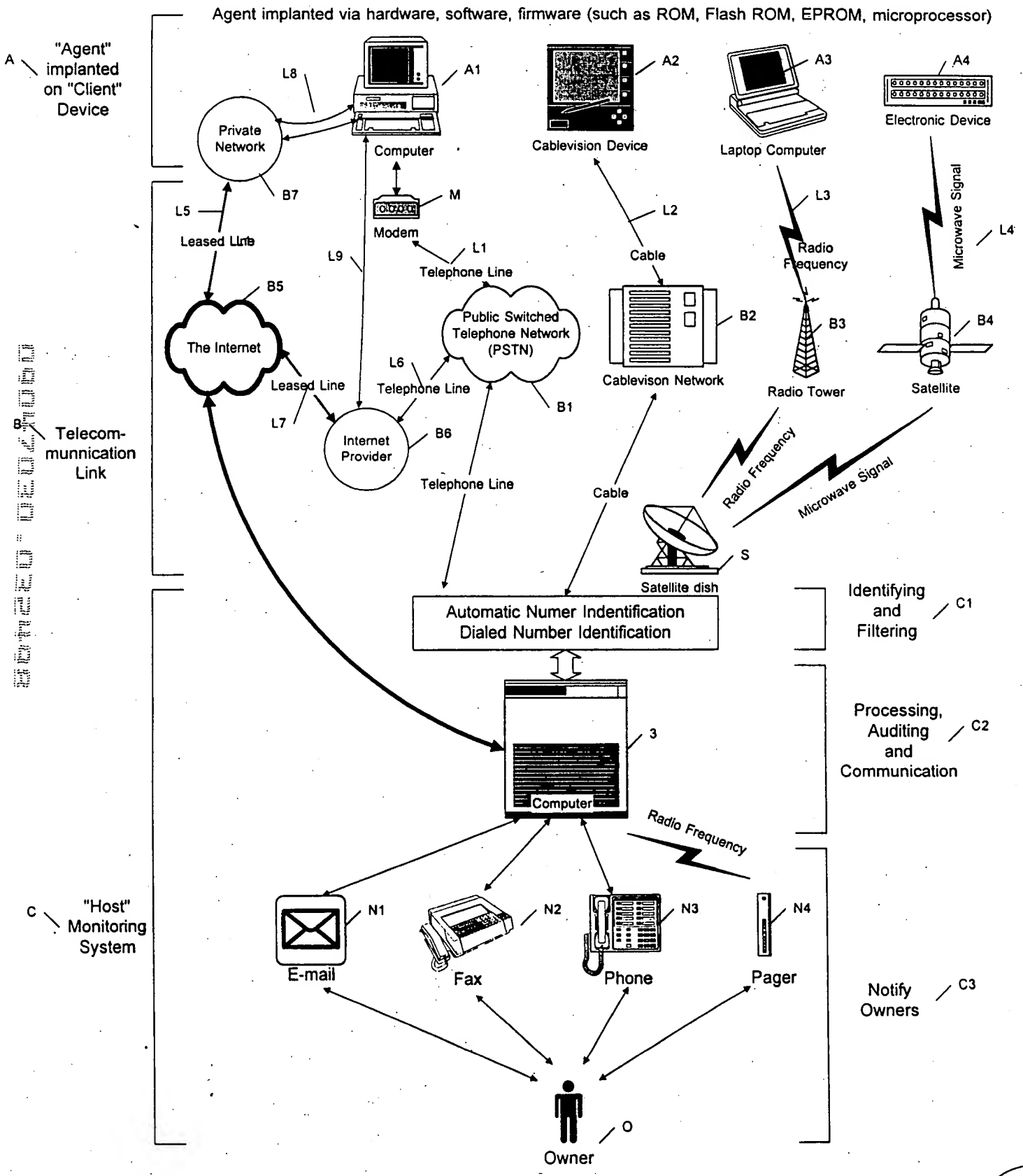
FIG. 1



REPLACEMENT SHEET

FIG. 2

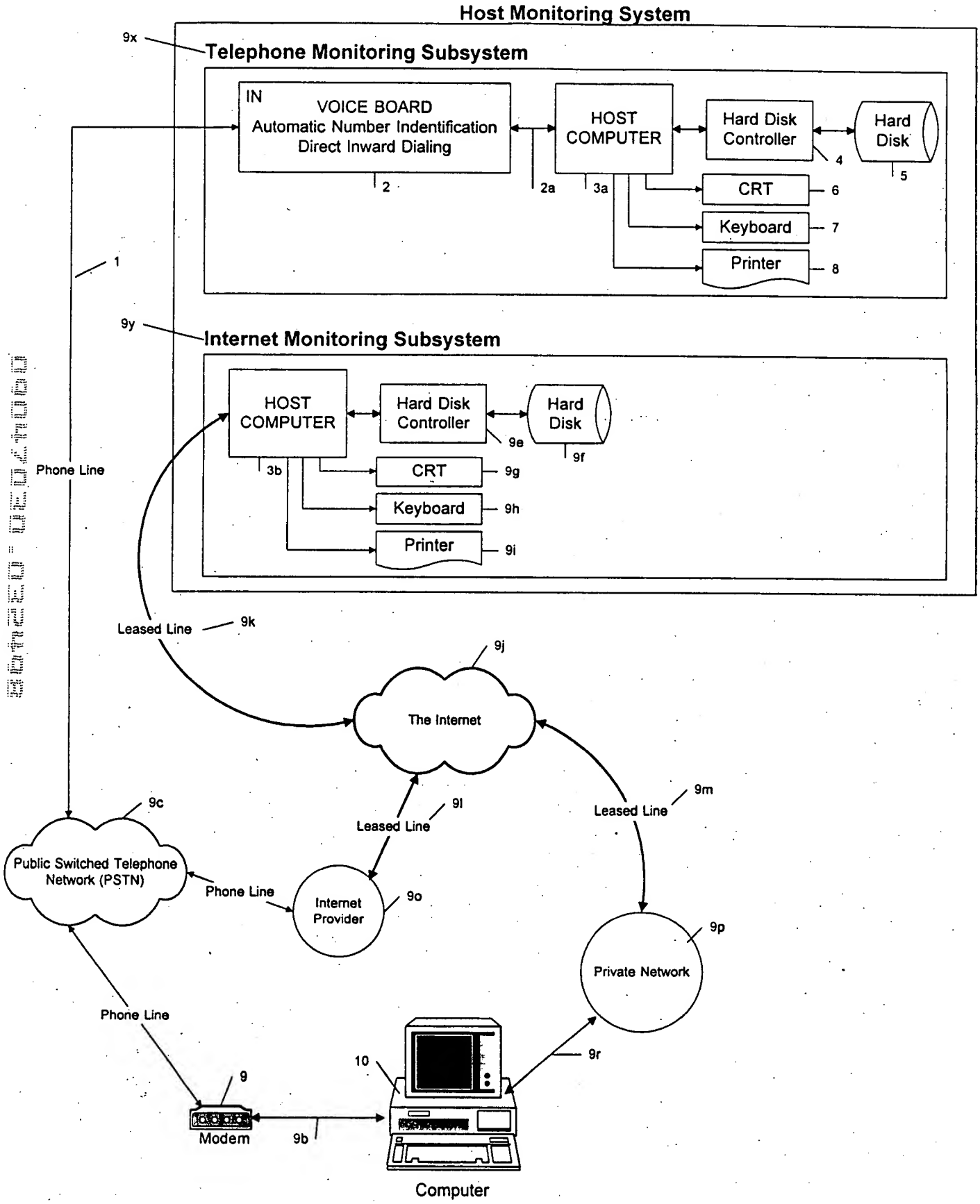

Host Monitoring System
9x
Telephone Monitoring Subsystem
IN
VOICE BOARD
Automatic Number Indentification
Direct Inward Dialing
2
HOST COMPUTER
2a
3a
Hard Disk Controller
4
Hard Disk
5
CRT
6
Keyboard
7
Printer
8
1
9y
Internet Monitoring Subsystem
HOST COMPUTER
3b
Hard Disk Controller
9e
Hard Disk
9f
CRT
9g
Keyboard
9h
Printer
9i
Phone Line
Leased Line
9k
9j
The Internet
9c
Public Switched Telephone Network (PSTN)
Phone Line
Internet Provider
9o
Leased Line
9l
Leased Line
9m
9p
Private Network
Phone Line
9
Modem
9b
10
9r
Computer

FIG. 3

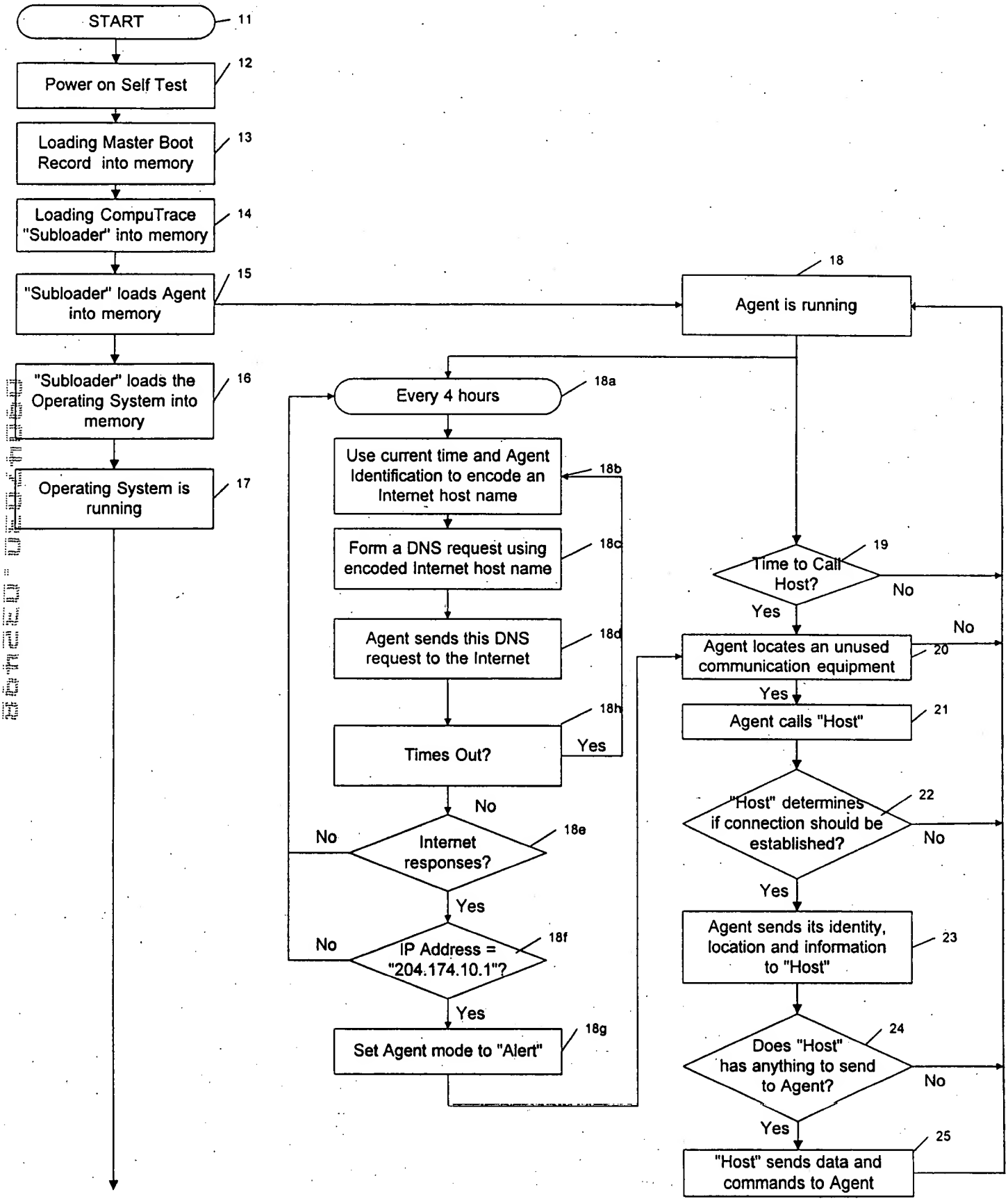

START
11
Power on Self Test
12
Loading Master Boot Record into memory
13
Loading CompuTrace "Subloader" into memory
14
"Subloader" loads Agent into memory
15
"Subloader" loads the Operating System into memory
16
Operating System is running
17
Agent is running
18
Every 4 hours
18a
Use current time and Agent Identification to encode an Internet host name
18b
Form a DNS request using encoded Internet host name
18c
Agent sends this DNS request to the Internet
18d
Times Out?
18h
Yes
No
Internet responses?
18e
No
Yes
IP Address = "204.174.10.1"?
18f
No
Yes
Set Agent mode to "Alert"
18g
Time to Call Host?
19
No
Yes
Agent locates an unused communication equipment
20
No
Yes
Agent calls "Host"
21
"Host" determines if connection should be established?
22
No
Yes
Agent sends its identity, location and information to "Host"
23
Does "Host" has anything to send to Agent?
24
No
Yes
"Host" sends data and commands to Agent
25

FIG. 4A

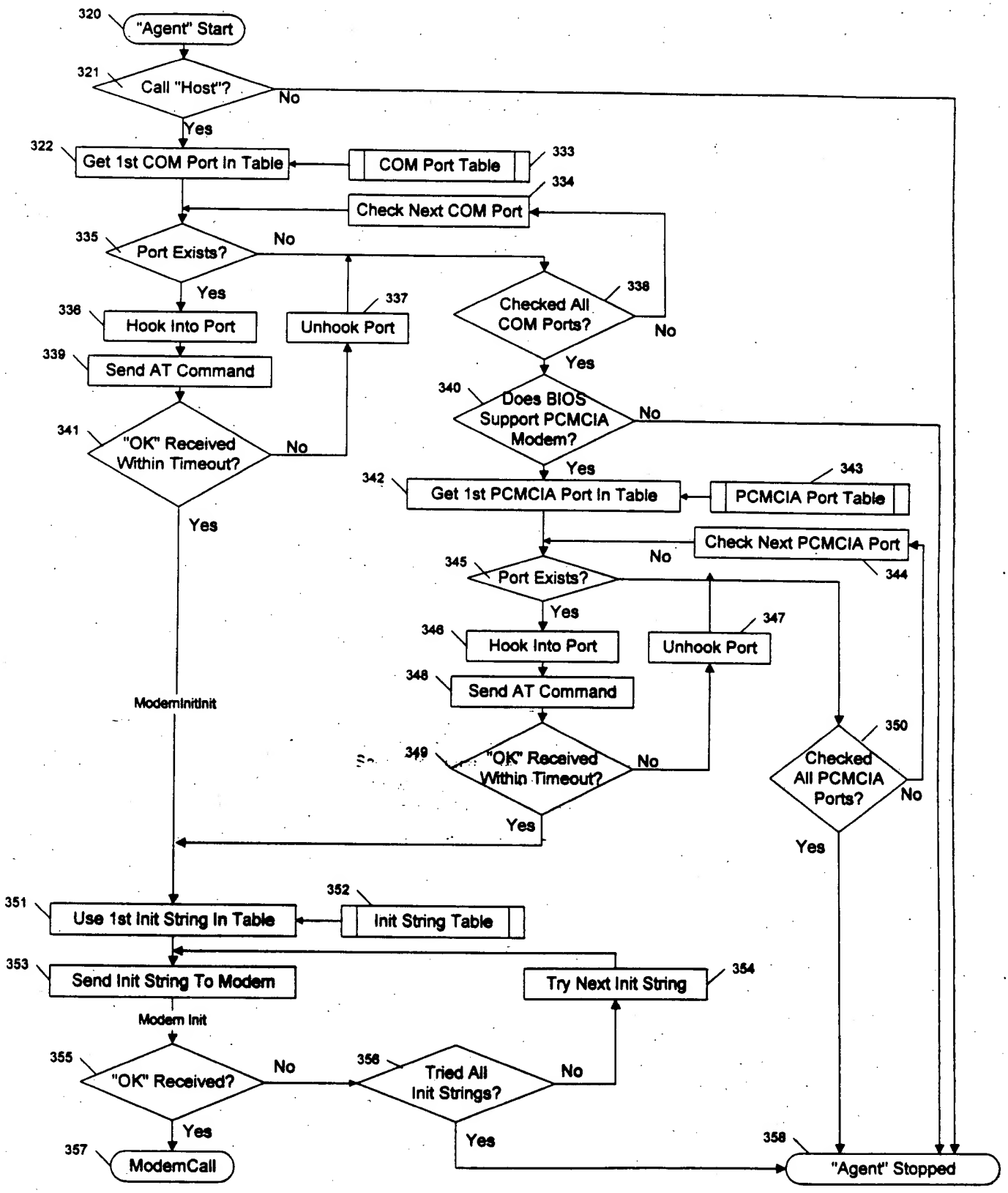

320
"Agent" Start
321
Call "Host"?
No
Yes
322
Get 1st COM Port In Table
COM Port Table
333
334
Check Next COM Port
335
Port Exists?
No
Yes
336
Hook Into Port
337
Unhook Port
338
Checked All COM Ports?
No
Yes
339
Send AT Command
340
Does BIOS Support PCMCIA Modem?
No
Yes
341
"OK" Received Within Timeout?
No
Yes
342
Get 1st PCMCIA Port In Table
PCMCIA Port Table
343
Check Next PCMCIA Port
344
No
345
Port Exists?
Yes
346
Hook Into Port
347
Unhook Port
348
Send AT Command
349
"OK" Received Within Timeout?
No
Yes
350
Checked All PCMCIA Ports?
No
Yes
ModemInitInit
351
Use 1st Init String In Table
352
Init String Table
353
Send Init String To Modem
354
Try Next Init String
Modem Init
355
"OK" Received?
No
Yes
356
Tried All Init Strings?
No
Yes
357
ModemCall
358
"Agent" Stopped

FIG. 4B

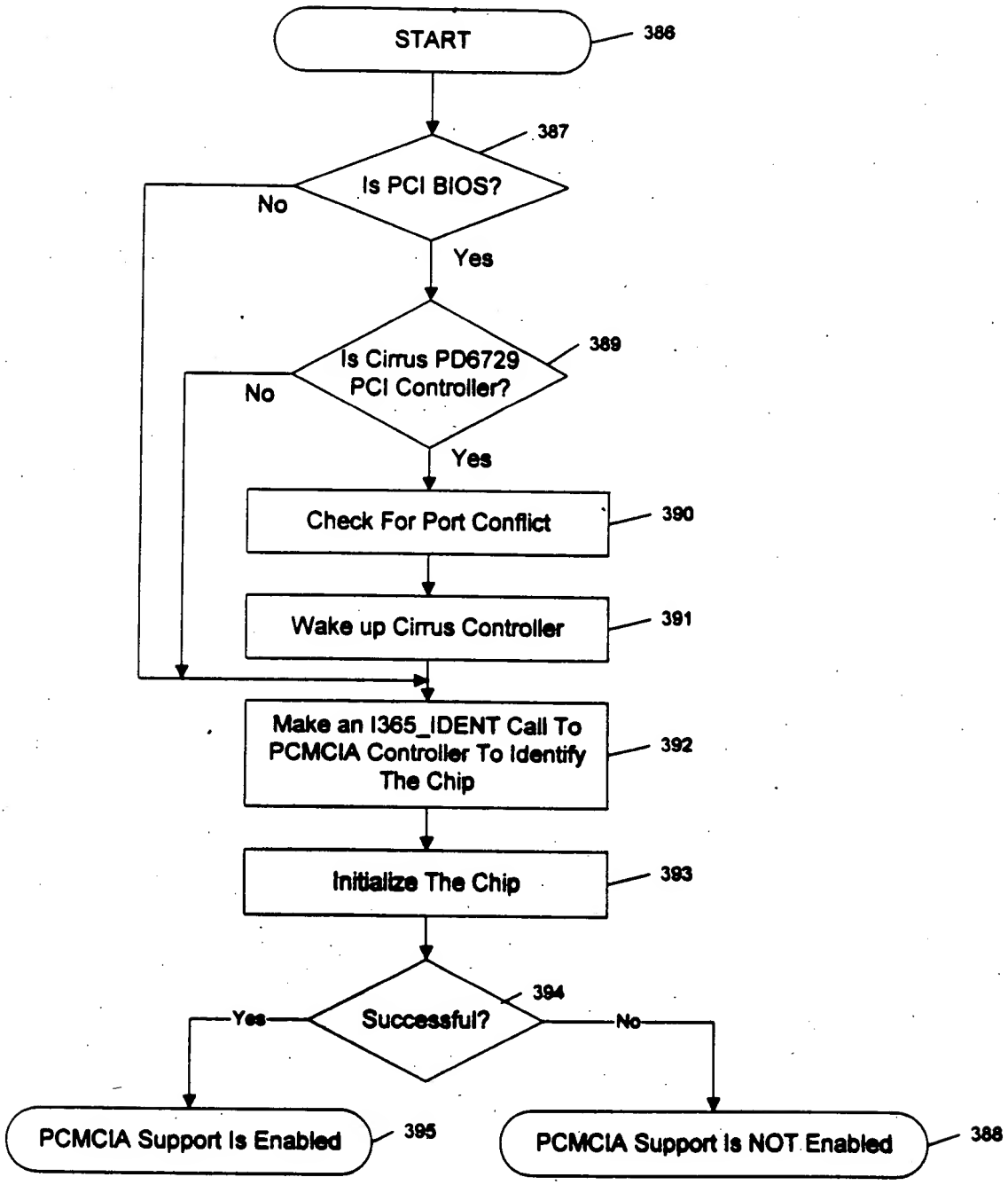

START
386
387
Is PCI BIOS?
No
Yes
389
Is Cirrus PD6729 PCI Controller?
No
Yes
Check For Port Conflict
390
Wake up Cirrus Controller
391
Make an I365_IDENT Call To PCMCIA Controller To Identify The Chip
392
Initialize The Chip
393
394
Successful?
Yes
No
PCMCIA Support Is Enabled
395
PCMCIA Support Is NOT Enabled
388

FIG. 4C

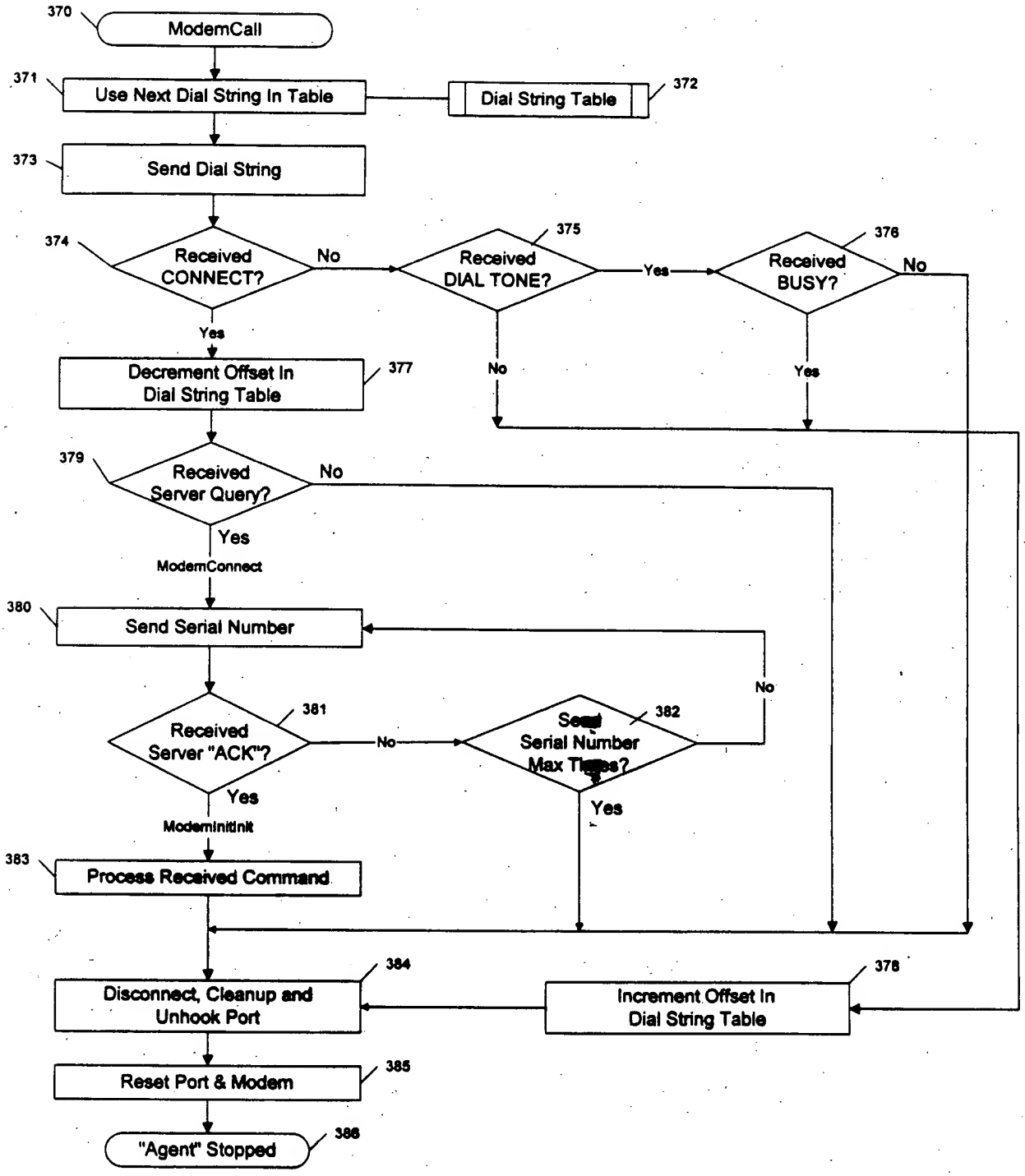
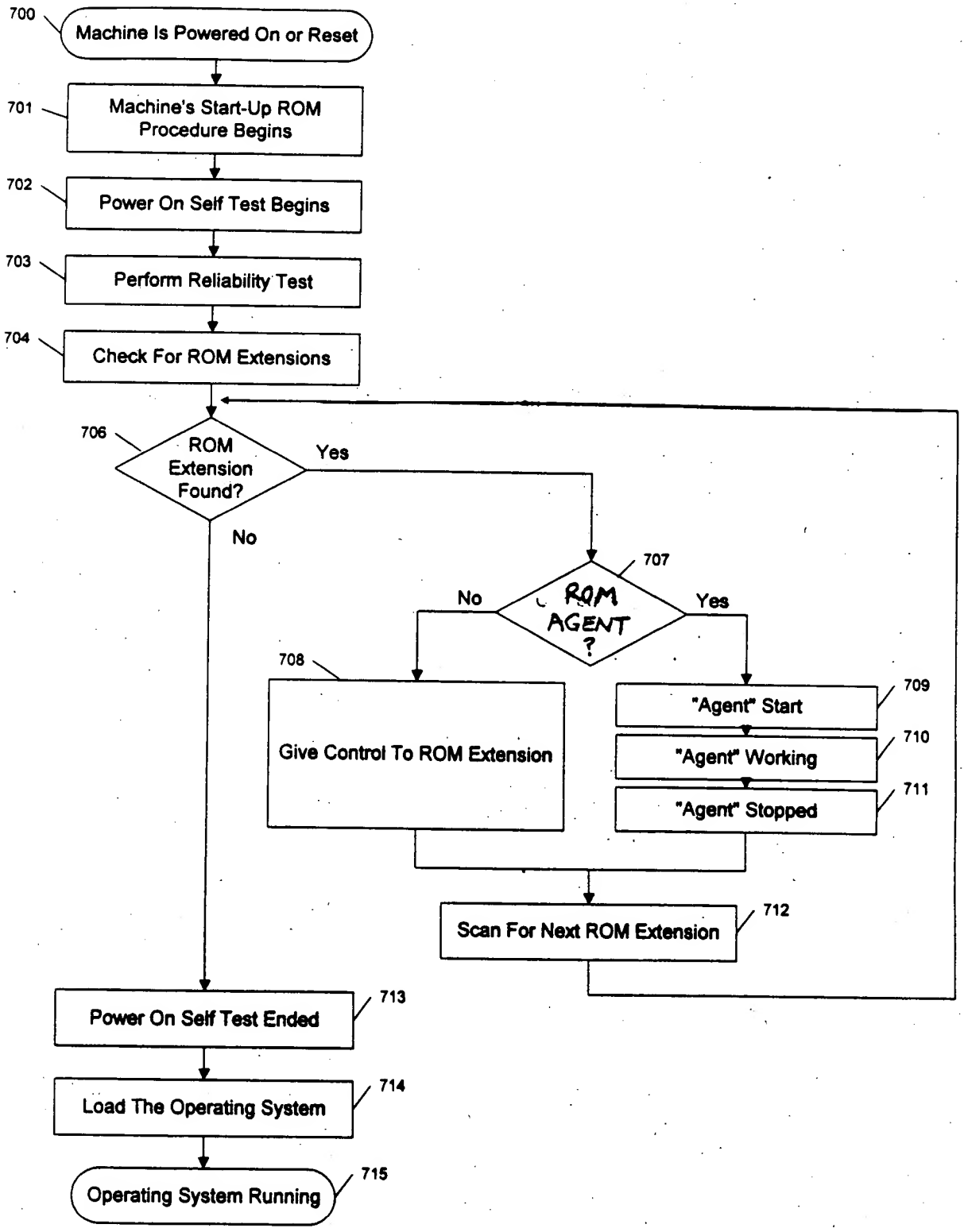

370
ModemCall
371
Use Next Dial String In Table
Dial String Table
372
373
Send Dial String
374
Received CONNECT?
No
375
Received DIAL TONE?
Yes
376
Received BUSY?
No
Yes
Yes
No
Yes
Decrement Offset In Dial String Table
377
379
Received Server Query?
No
Yes
ModemConnect
380
Send Serial Number
No
381
Received Server "ACK"?
No
382
Send Serial Number Max Times?
Yes
Yes
ModemInitInit
383
Process Received Command
384
Disconnect, Cleanup and Unhook Port
378
Increment Offset In Dial String Table
385
Reset Port & Modem
386
"Agent" Stopped

FIG. 5


700
Machine Is Powered On or Reset
701
Machine's Start-Up ROM Procedure Begins
702
Power On Self Test Begins
703
Perform Reliability Test
704
Check For ROM Extensions
706
ROM Extension Found?
Yes
No
707
ROM AGENT ?
No
Yes
708
Give Control To ROM Extension
709
"Agent" Start
710
"Agent" Working
711
"Agent" Stopped
712
Scan For Next ROM Extension
713
Power On Self Test Ended
714
Load The Operating System
715
Operating System Running

SCANNED - DOCUMENT

Fig. 6A

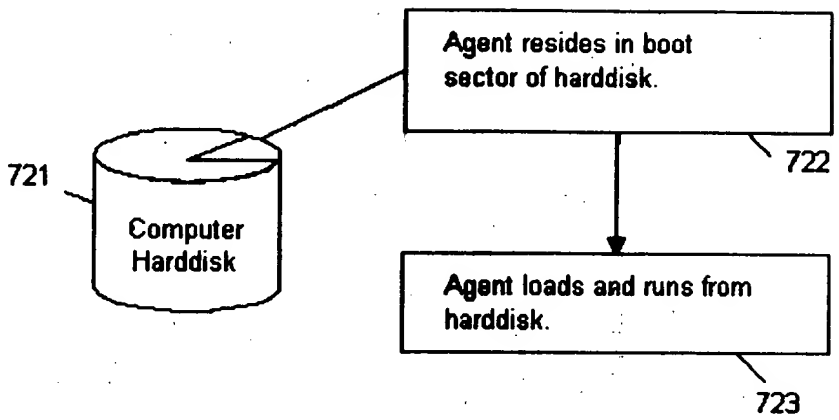
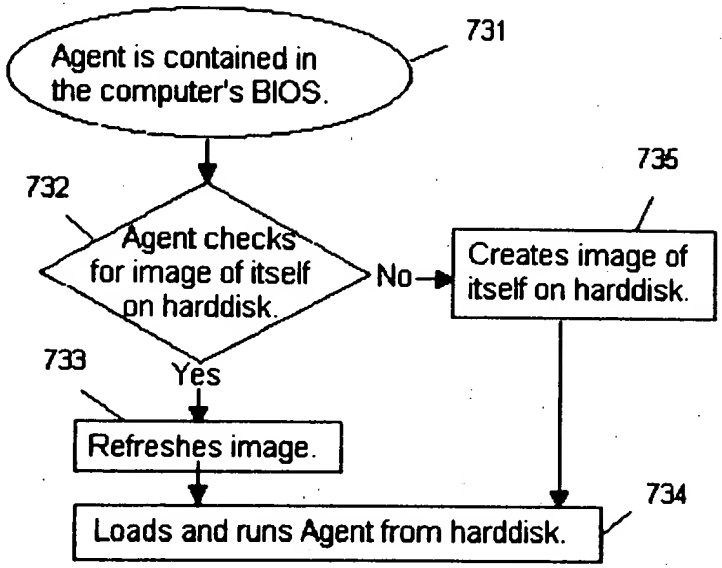


Fig. 6C



80n2E0 0E0Z1n0b0

Fig. 6D

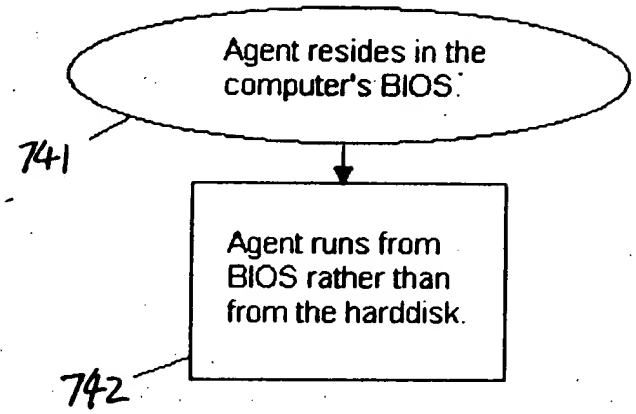


Fig. 7A

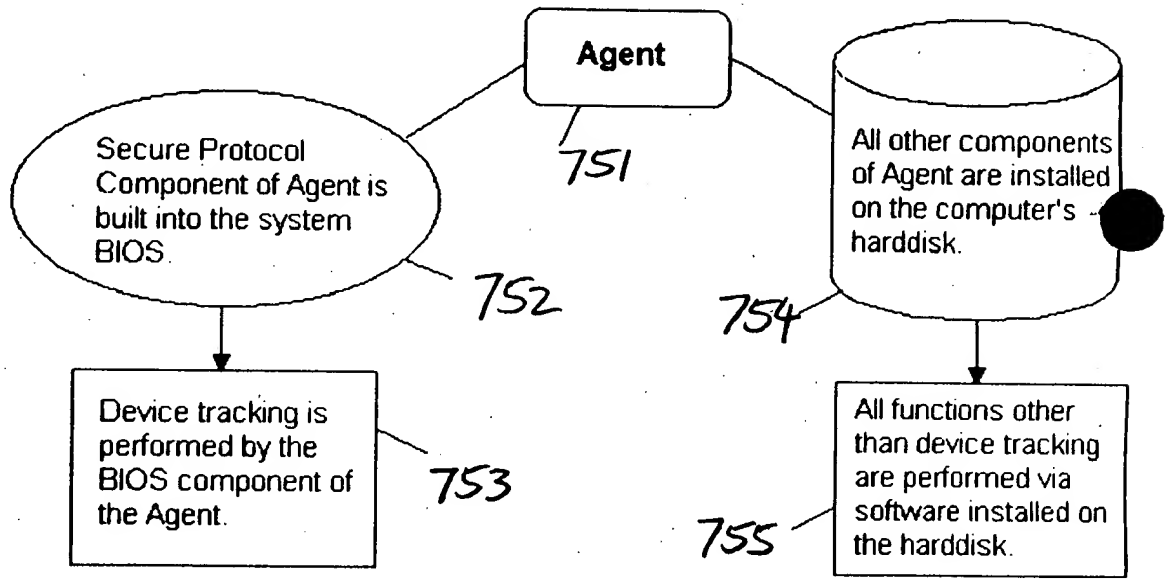
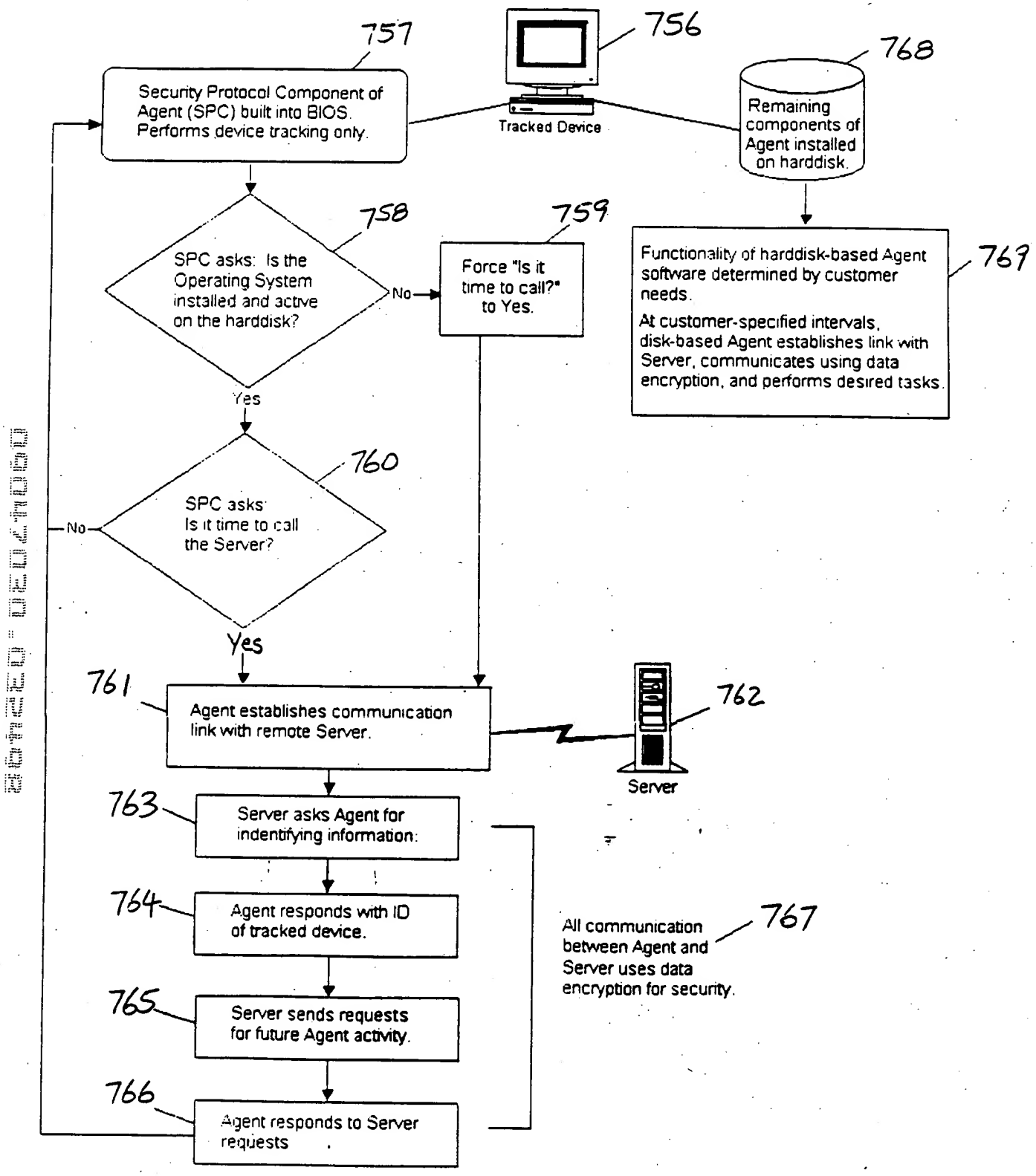


Fig. 7B



Defendant's Exhibit 2003

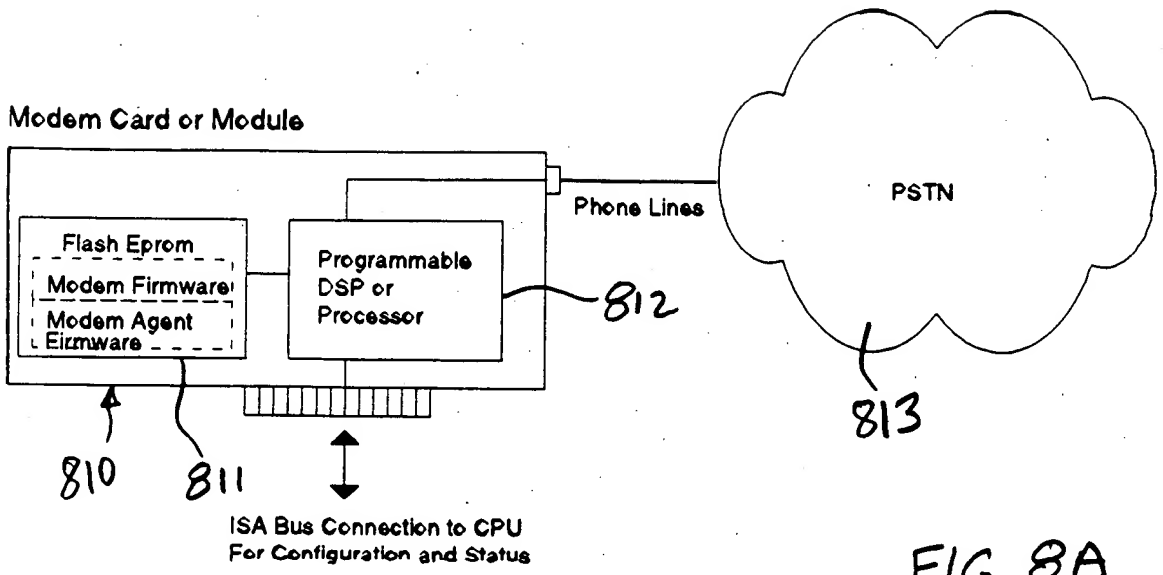

Modem Card or Module
Flash Eprom
Modem Firmware
Modem Agent Firmware
Programmable DSP or Processor
812
Phone Lines
PSTN
813
810
811
ISA Bus Connection to CPU
For Configuration and Status

FIG. 8A

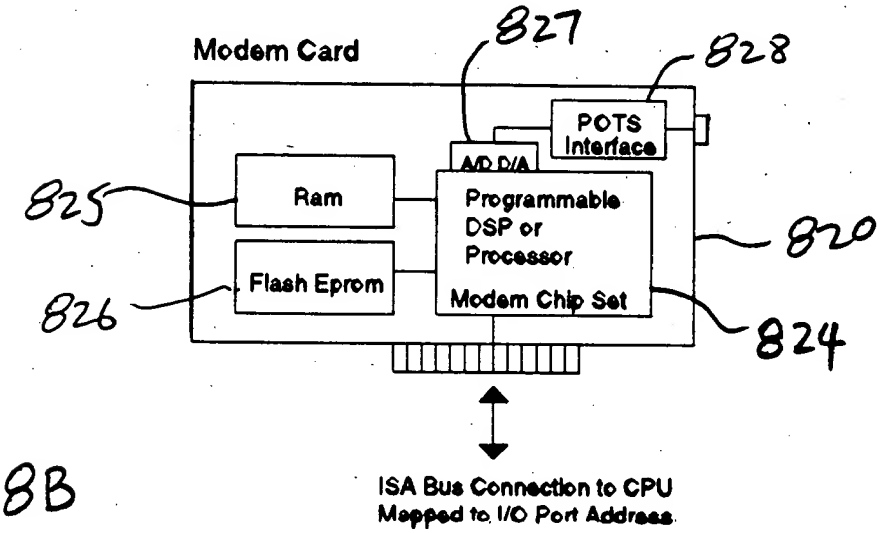

Modem Card
827
828
POTS Interface
A/D D/A
825
Ram
Programmable DSP or Processor
820
826
Flash Eprom
Modem Chip Set
824
ISA Bus Connection to CPU
Mapped to I/O Port Address

FIG. 8B

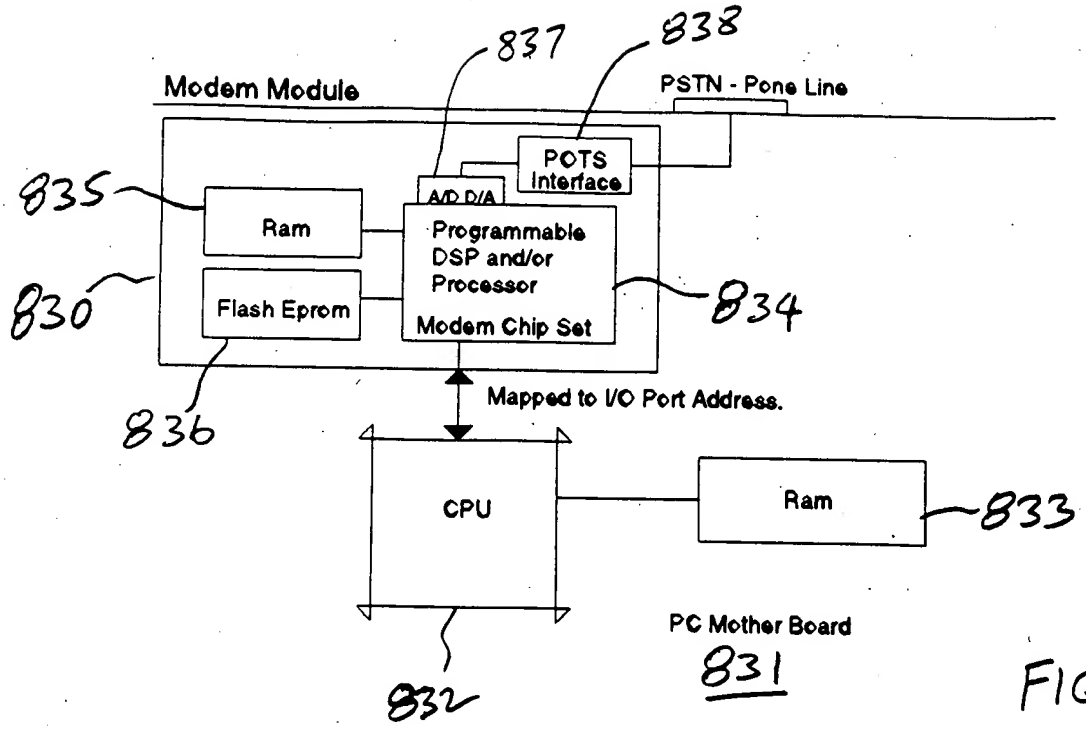

Modem Module
837
838
PSTN - Pone Line
POTS Interface
A/D D/A
835
Ram
Programmable DSP and/or Processor
Modem Chip Set
834
830
Flash Eprom
836
Mapped to I/O Port Address.
CPU
Ram
833
PC Mother Board
831
832

FIG. 8C

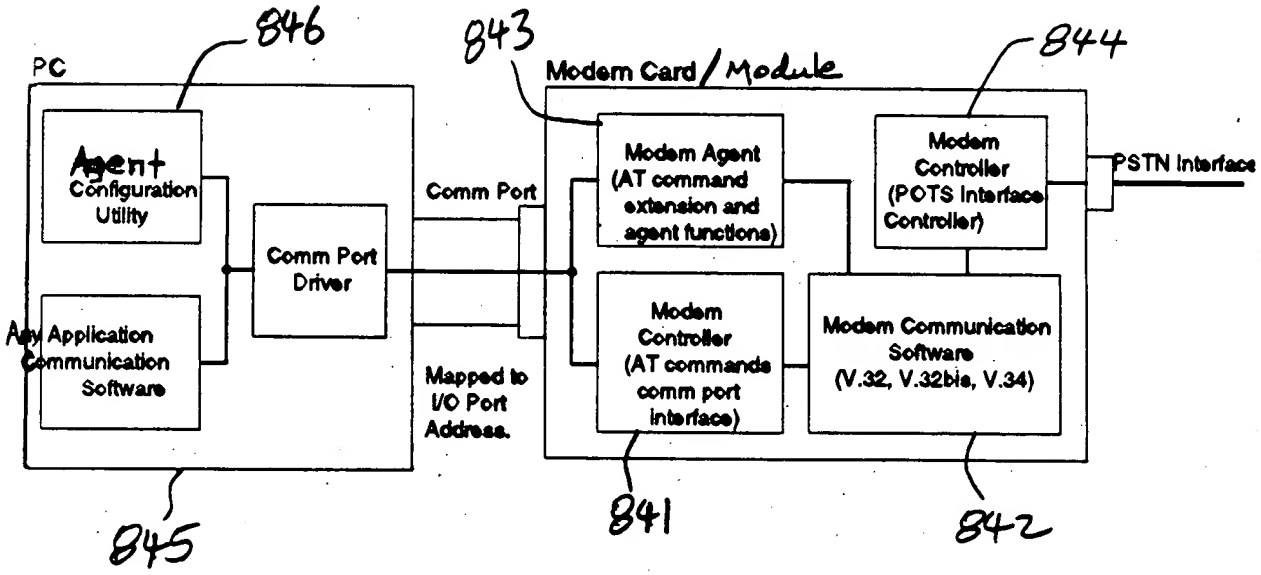

846
PC
843
Modem Card / Module
844
Agent Configuration Utility
Comm Port Driver
Any Application Communication Software
Comm Port
Mapped to I/O Port Address.
Modem Agent (AT command extension and agent functions)
Modem Controller (AT commands comm port interface)
Modem Controller (POTS Interface Controller)
Modem Communication Software (V.32, V.32bis, V.34)
PSTN Interface
845
841
842

FIG. 8D

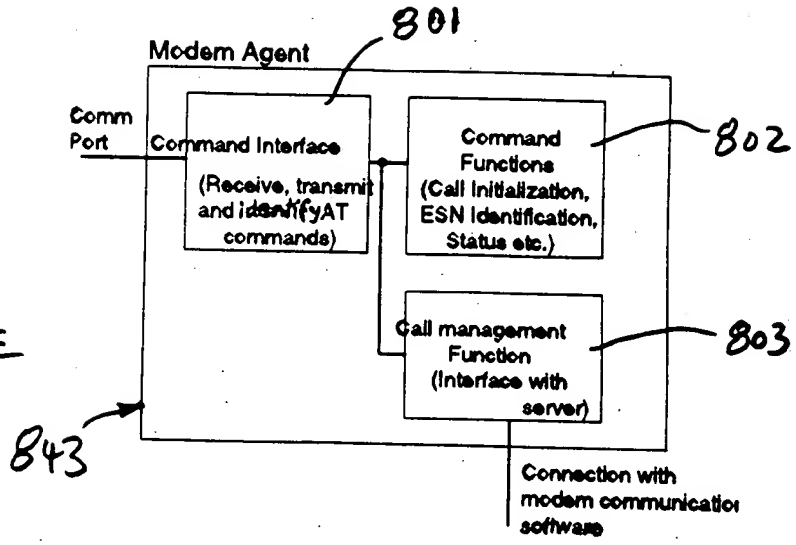

801
Modem Agent
Comm Port
Command Interface
(Receive, transmit and identify AT commands)
Command Functions
(Call Initialization, ESN Identification, Status etc.)
802
Call management Function
(Interface with server)
803
843
Connection with modem communication software

FIG. 8E

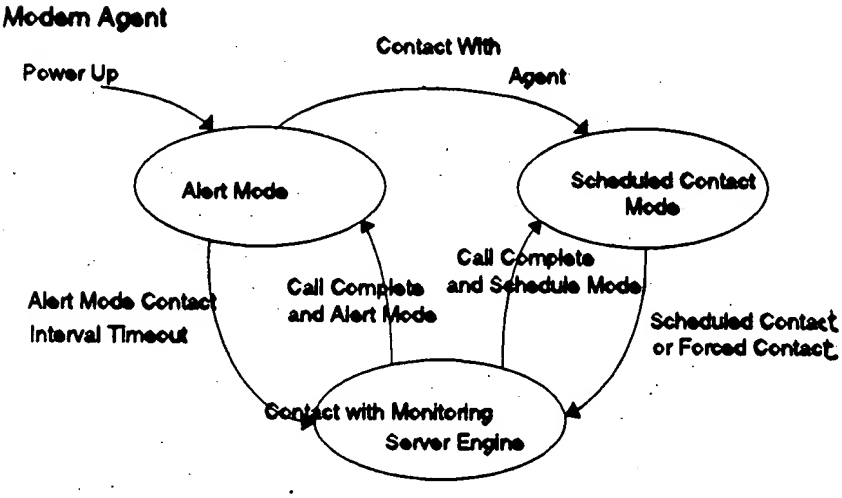

Modem Agent
Power Up
Contact With Agent
Alert Mode
Scheduled Contact Mode
Call Complete and Schedule Mode
Alert Mode Contact Interval Timeout
Call Complete and Alert Mode
Scheduled Contact or Forced Contact
Contact with Monitoring Server Engine

FIG. 8F

FIG. 9

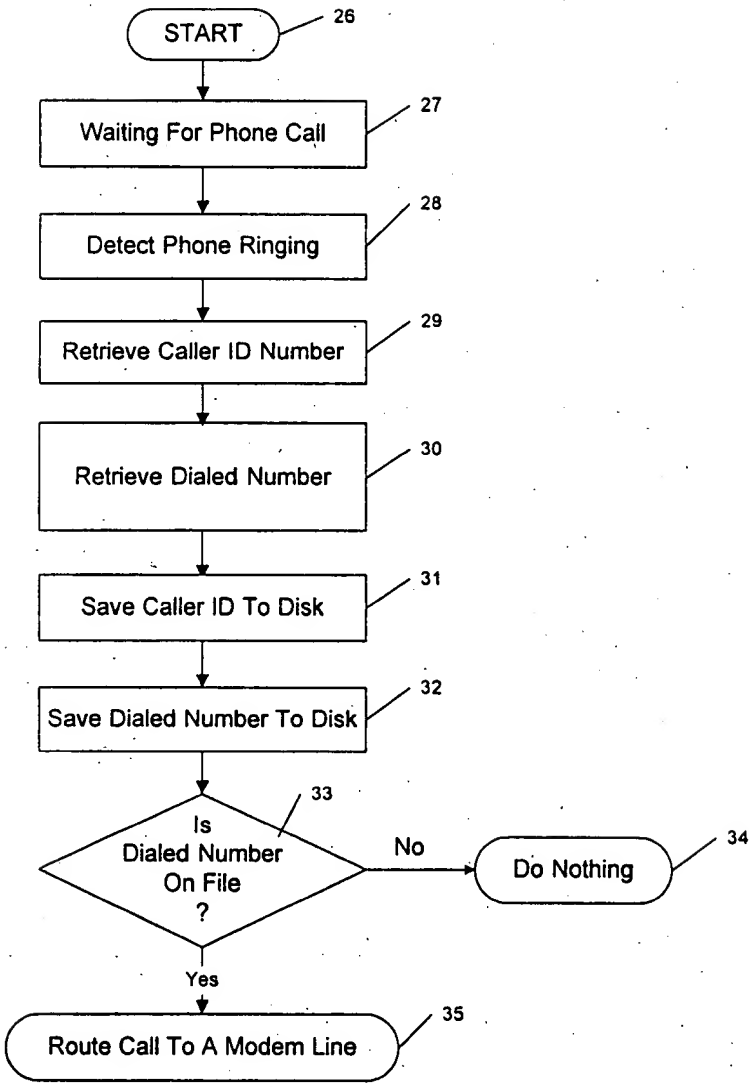

START
26
Waiting For Phone Call
27
Detect Phone Ringing
28
Retrieve Caller ID Number
29
Retrieve Dialed Number
30
Save Caller ID To Disk
31
Save Dialed Number To Disk
32
Is Dialed Number On File ?
33
No
Do Nothing
34
Yes
Route Call To A Modem Line
35

FIG. 10A

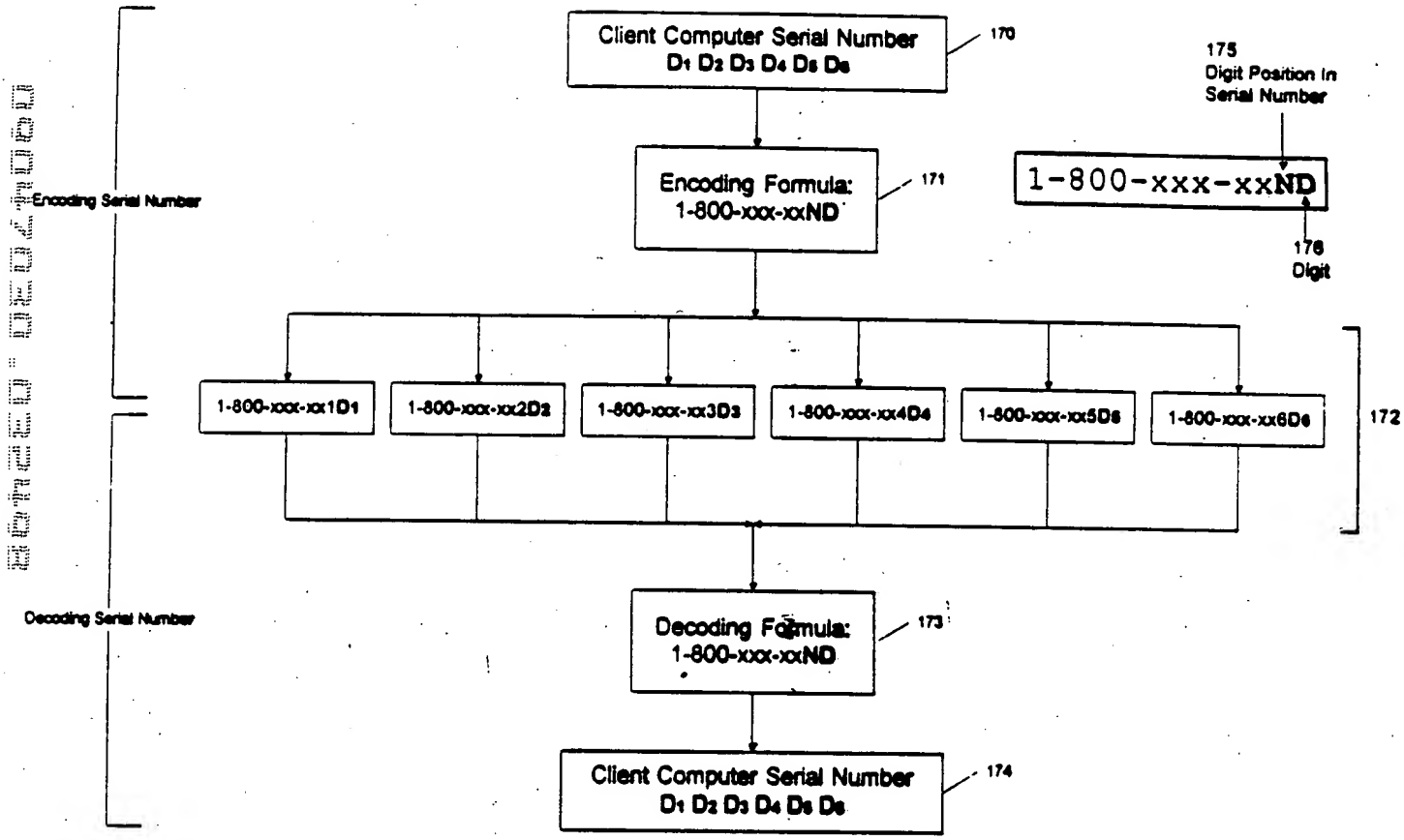

Client Computer Serial Number
D1 D2 D3 D4 D5 D6
170
175
Digit Position In Serial Number
Encoding Formula:
1-800-xxx-xxND
171
1-800-xxx-xxND
176
Digit
Encoding Serial Number
1-800-xxx-xx1D1
1-800-xxx-xx2D2
1-800-xxx-xx3D3
1-800-xxx-xx4D4
1-800-xxx-xx5D5
1-800-xxx-xx6D6
172
Decoding Serial Number
Decoding Formula:
1-800-xxx-xxND
173
Client Computer Serial Number
D1 D2 D3 D4 D5 D6
174

FIG. 10B

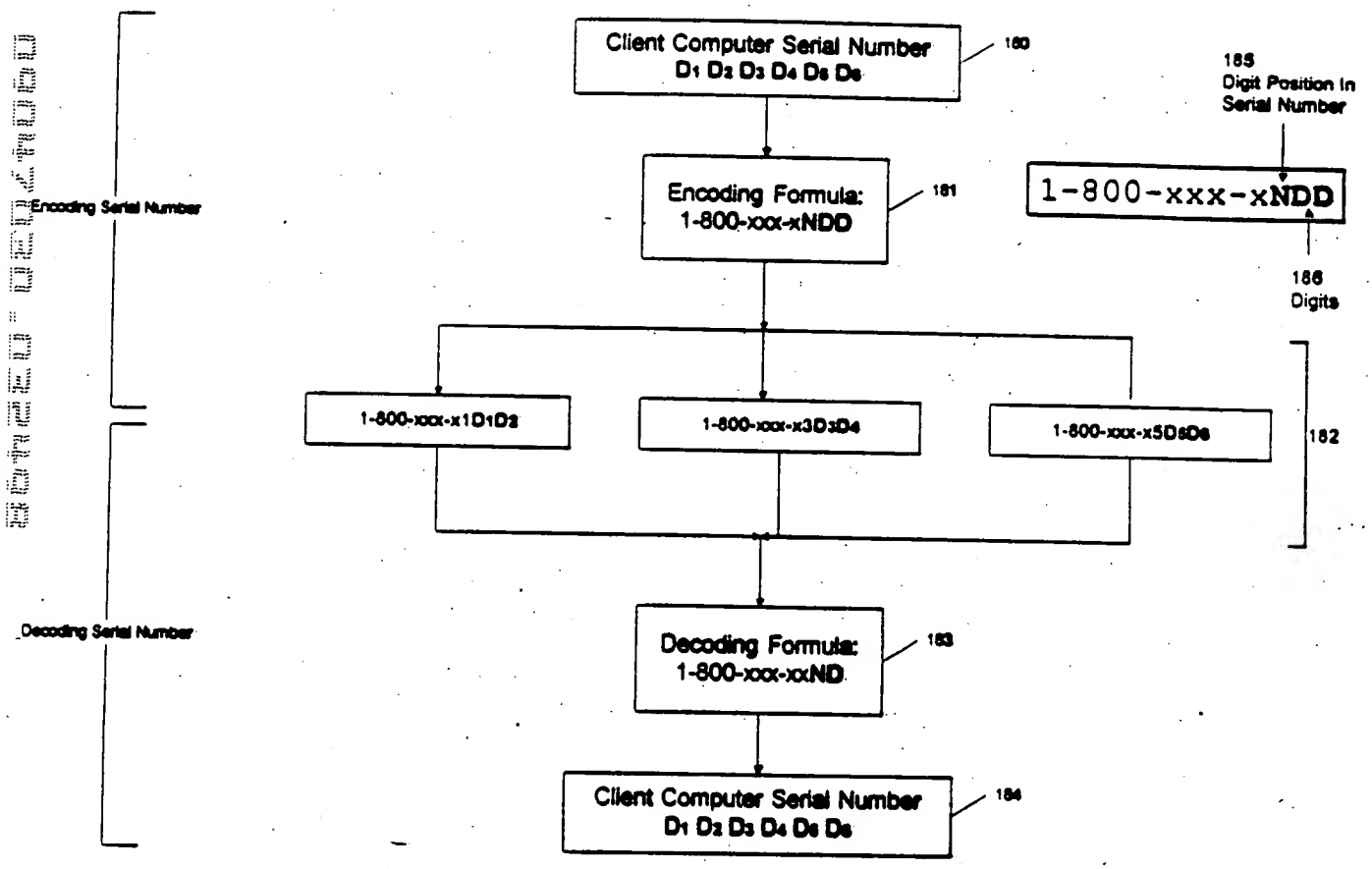

Encoding Serial Number
Decoding Serial Number
Client Computer Serial Number
D1 D2 D3 D4 D5 D6
160
Encoding Formula:
1-800-xxx-xNDD
181
185
Digit Position In
Serial Number
1-800-xxx-xNDD
186
Digits
1-800-xxx-x1D1D2
1-800-xxx-x3D3D4
1-800-xxx-x5D5D6
182
Decoding Formula:
1-800-xxx-xxND
183
Client Computer Serial Number
D1 D2 D3 D4 D5 D6
184

FIG. 11A

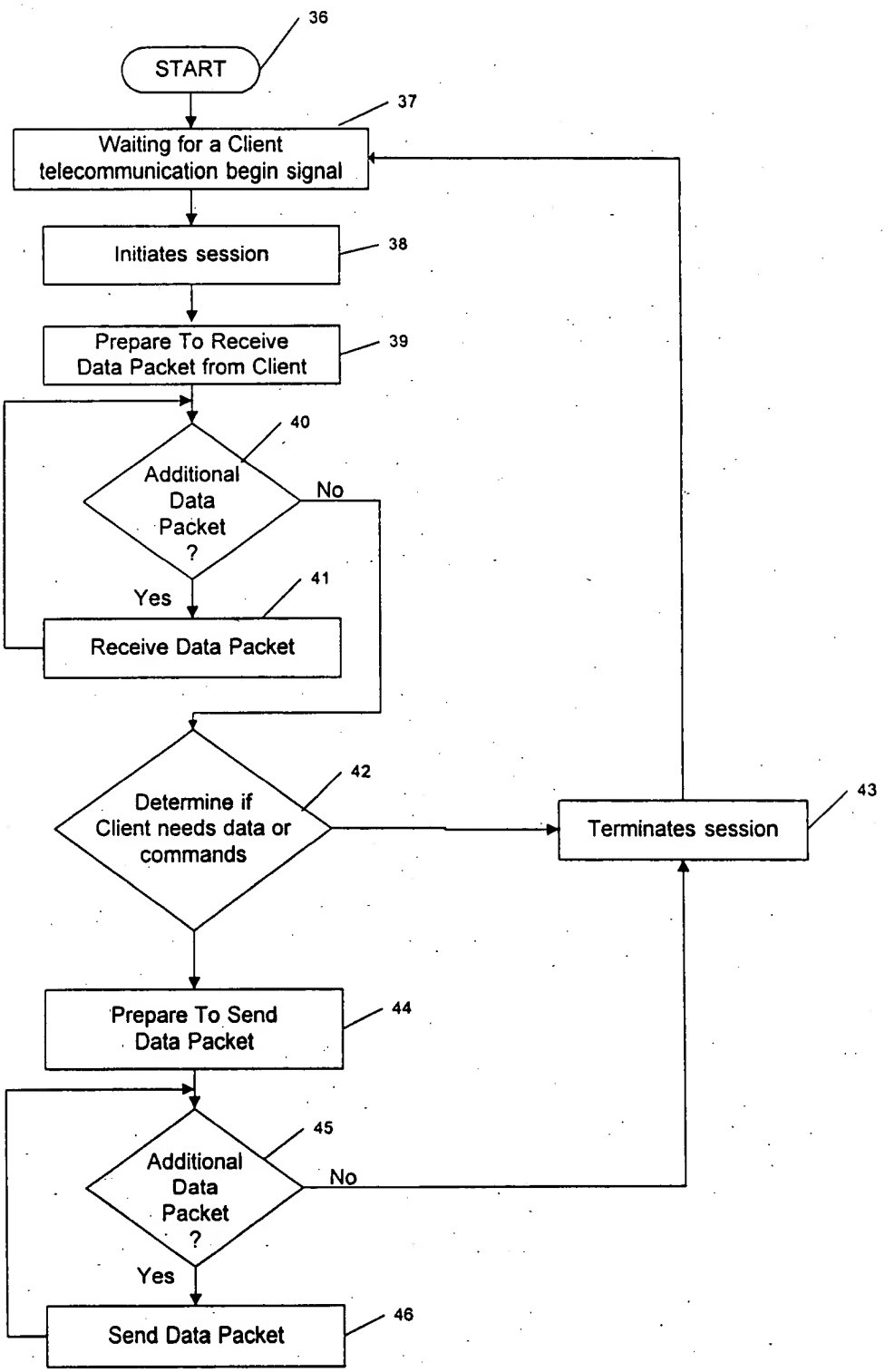

36
START
37
Waiting for a Client telecommunication begin signal
38
Initiates session
39
Prepare To Receive Data Packet from Client
40
Additional Data Packet ?
No
Yes
41
Receive Data Packet
42
Determine if Client needs data or commands
43
Terminates session
44
Prepare To Send Data Packet
45
Additional Data Packet ?
No
Yes
46
Send Data Packet

FIG. 11B

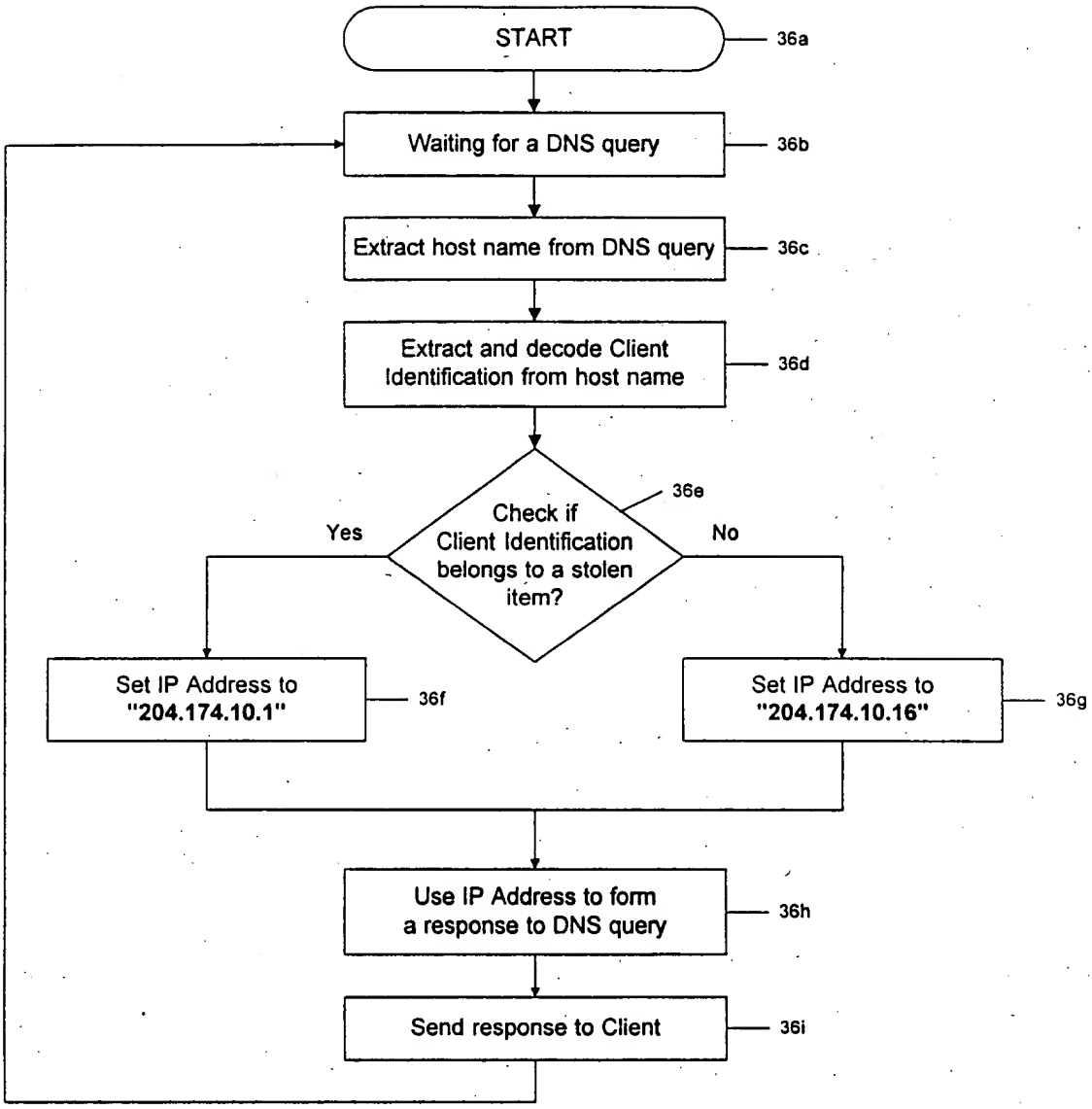


Fig. 11C

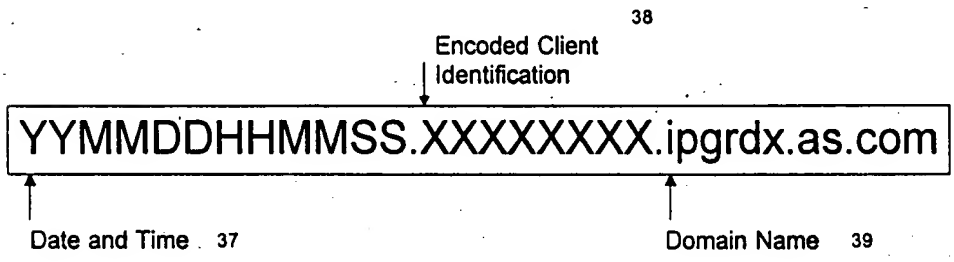
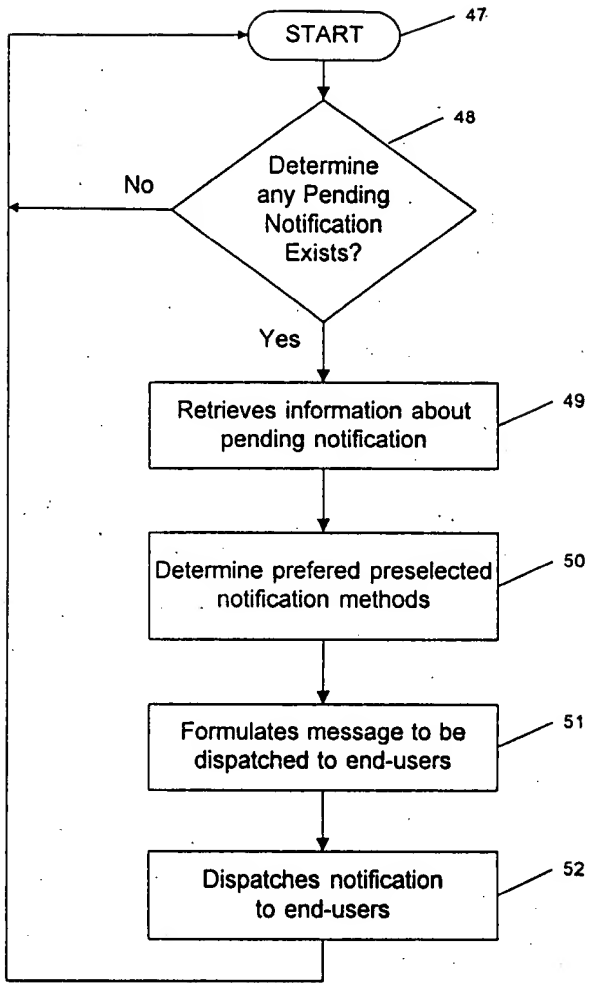


FIG. 12


START
47
48
Determine any Pending Notification Exists?
No
Yes
Retrieves information about pending notification
49
Determine prefered preselected notification methods
50
Formulates message to be dispatched to end-users
51
Dispatches notification to end-users
52

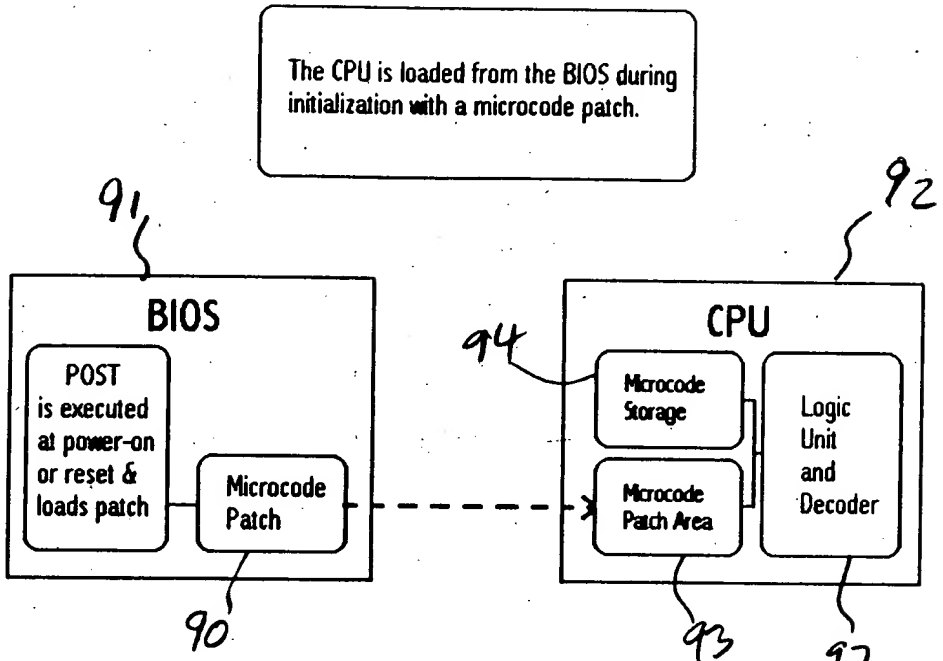


FIG 13A

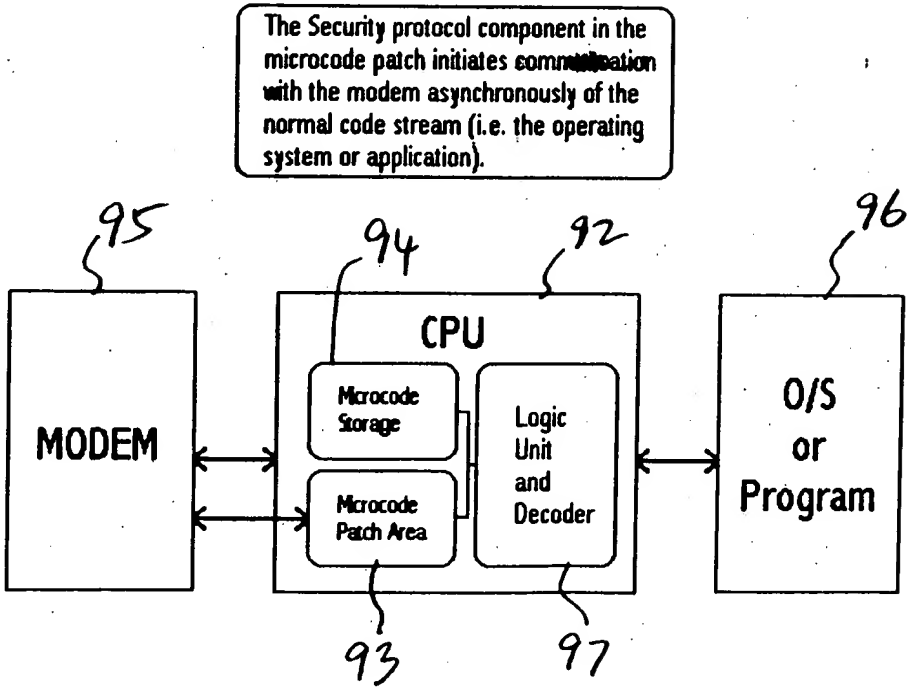


FIG. 13B

FIG. 14

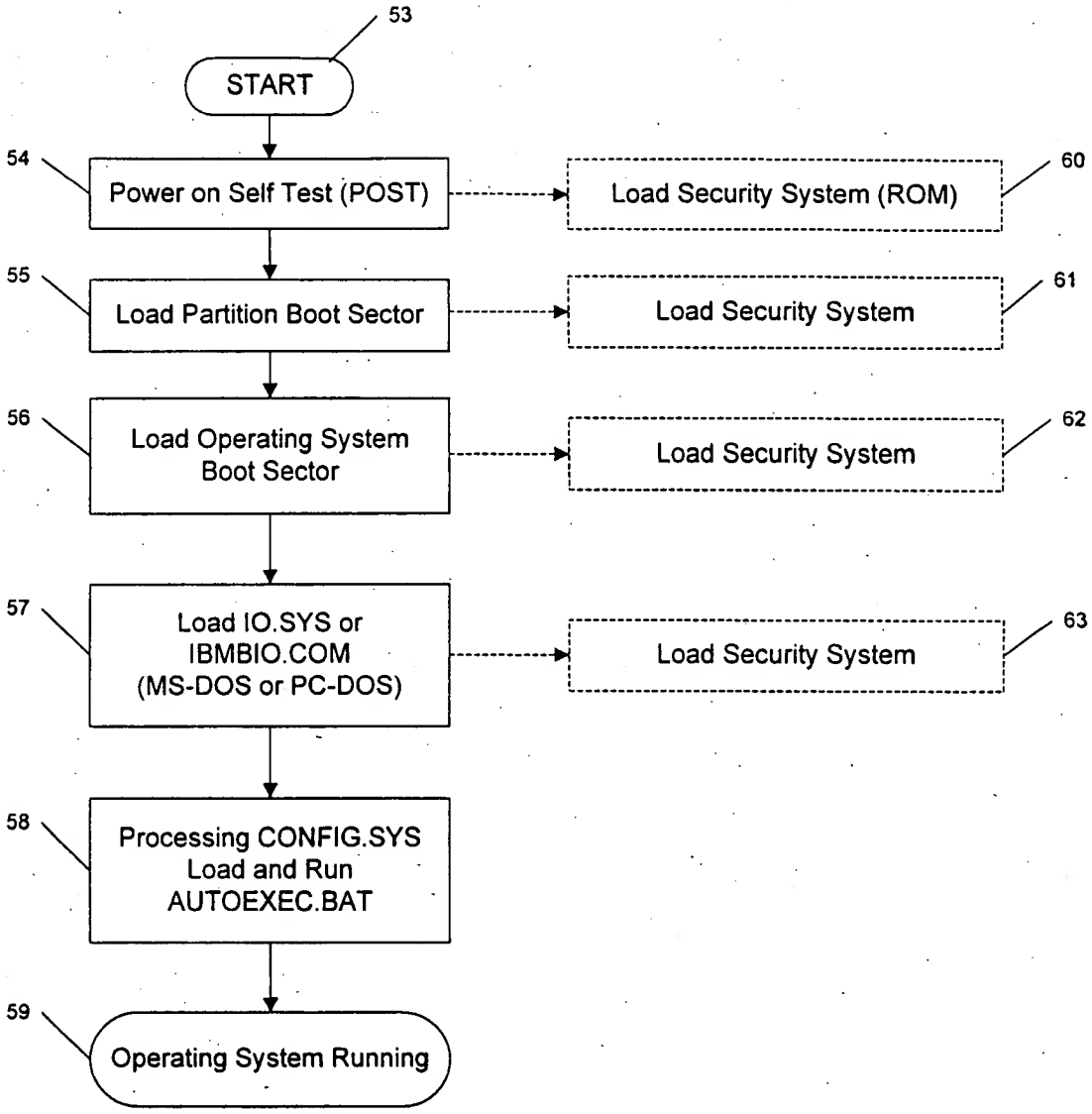

53
START
54
Power on Self Test (POST)
60
Load Security System (ROM)
55
Load Partition Boot Sector
61
Load Security System
56
Load Operating System Boot Sector
62
Load Security System
57
Load IO.SYS or IBMBIO.COM (MS-DOS or PC-DOS)
63
Load Security System
58
Processing CONFIG.SYS Load and Run AUTOEXEC.BAT
59
Operating System Running

FIG. 14A

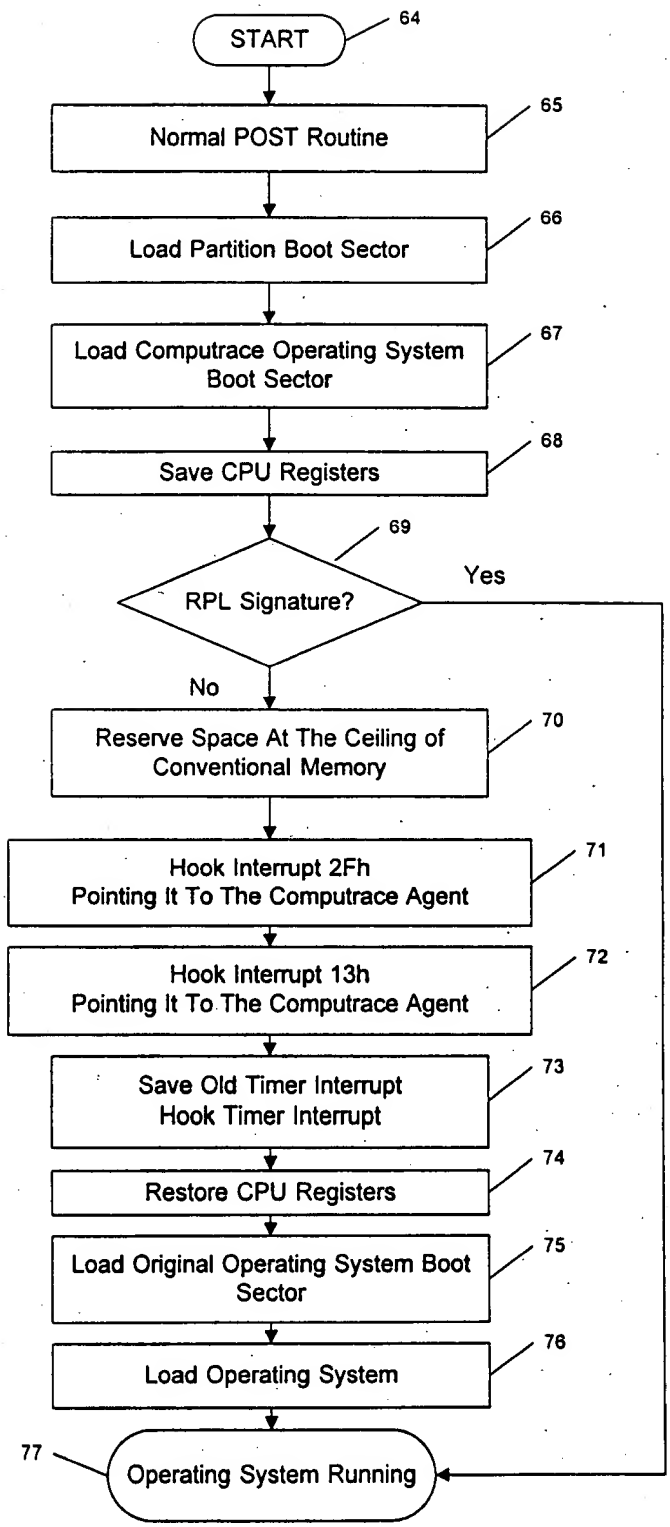

START
64
Normal POST Routine
65
Load Partition Boot Sector
66
Load Computrace Operating System Boot Sector
67
Save CPU Registers
68
RPL Signature?
69
Yes
No
Reserve Space At The Ceiling of Conventional Memory
70
Hook Interrupt 2Fh Pointing It To The Computrace Agent
71
Hook Interrupt 13h Pointing It To The Computrace Agent
72
Save Old Timer Interrupt Hook Timer Interrupt
73
Restore CPU Registers
74
Load Original Operating System Boot Sector
75
Load Operating System
76
Operating System Running
77

FIG.14B

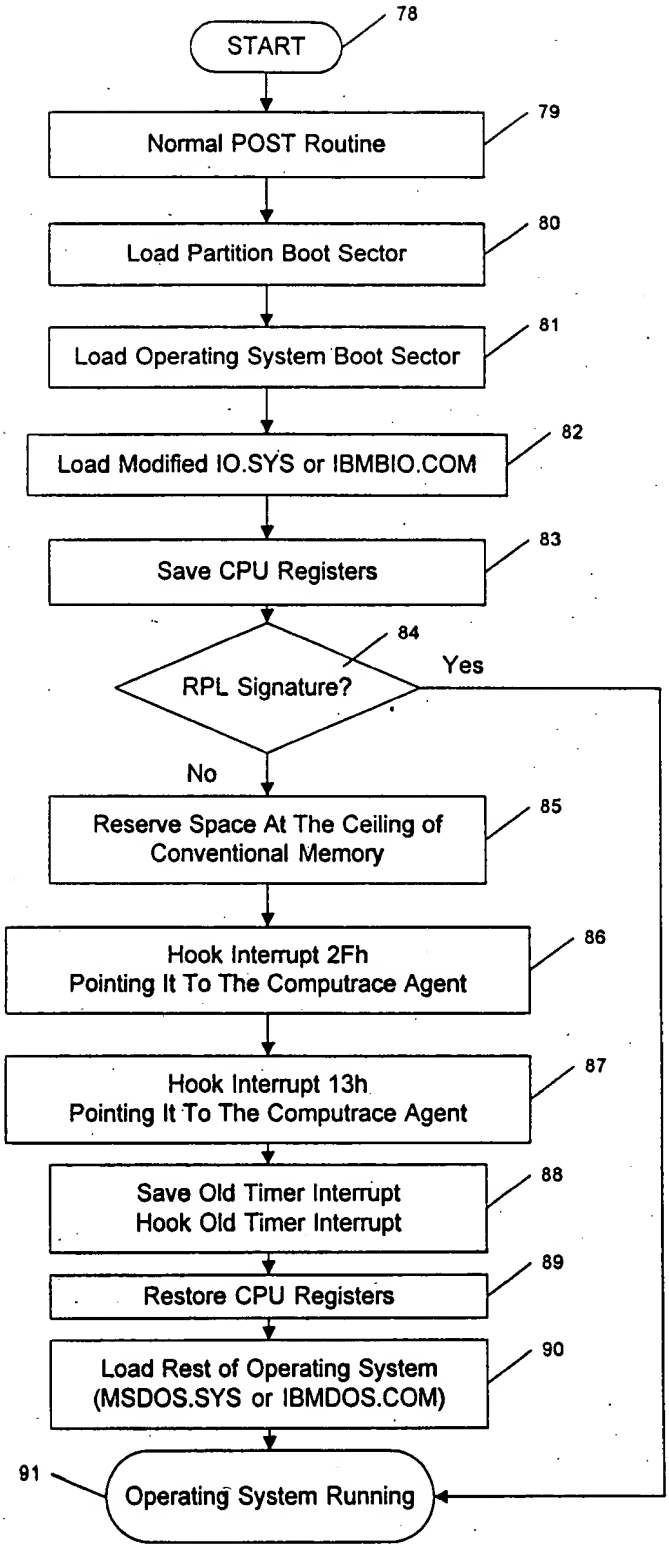

START
78
Normal POST Routine
79
Load Partition Boot Sector
80
Load Operating System Boot Sector
81
Load Modified IO.SYS or IBMBIO.COM
82
Save CPU Registers
83
RPL Signature?
84
Yes
No
Reserve Space At The Ceiling of Conventional Memory
85
Hook Interrupt 2Fh Pointing It To The Computrace Agent
86
Hook Interrupt 13h Pointing It To The Computrace Agent
87
Save Old Timer Interrupt Hook Old Timer Interrupt
88
Restore CPU Registers
89
Load Rest of Operating System (MSDOS.SYS or IBMDOS.COM)
90
91
Operating System Running

FIG.14C

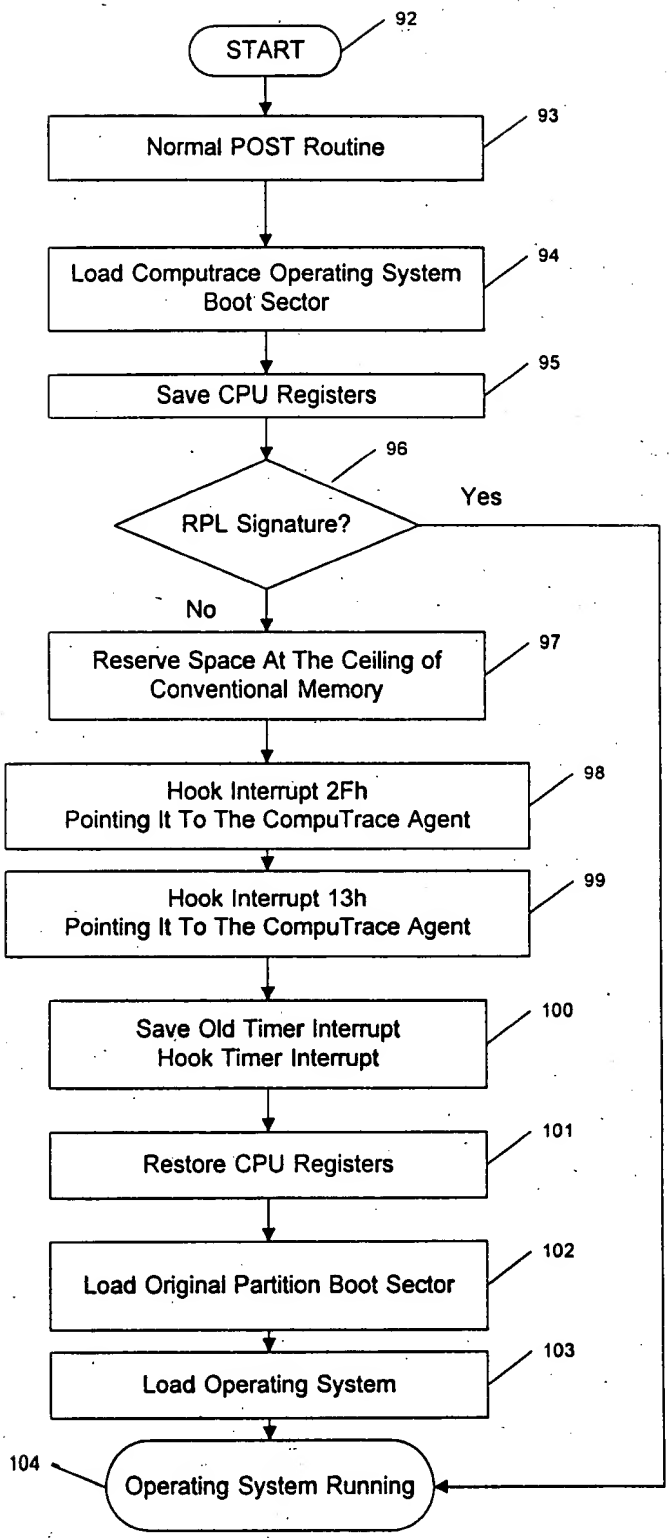

START
92
Normal POST Routine
93
Load Computrace Operating System Boot Sector
94
Save CPU Registers
95
RPL Signature?
96
Yes
No
Reserve Space At The Ceiling of Conventional Memory
97
Hook Interrupt 2Fh Pointing It To The CompuTrace Agent
98
Hook Interrupt 13h Pointing It To The CompuTrace Agent
99
Save Old Timer Interrupt Hook Timer Interrupt
100
Restore CPU Registers
101
Load Original Partition Boot Sector
102
Load Operating System
103
Operating System Running
104

FIG.14D

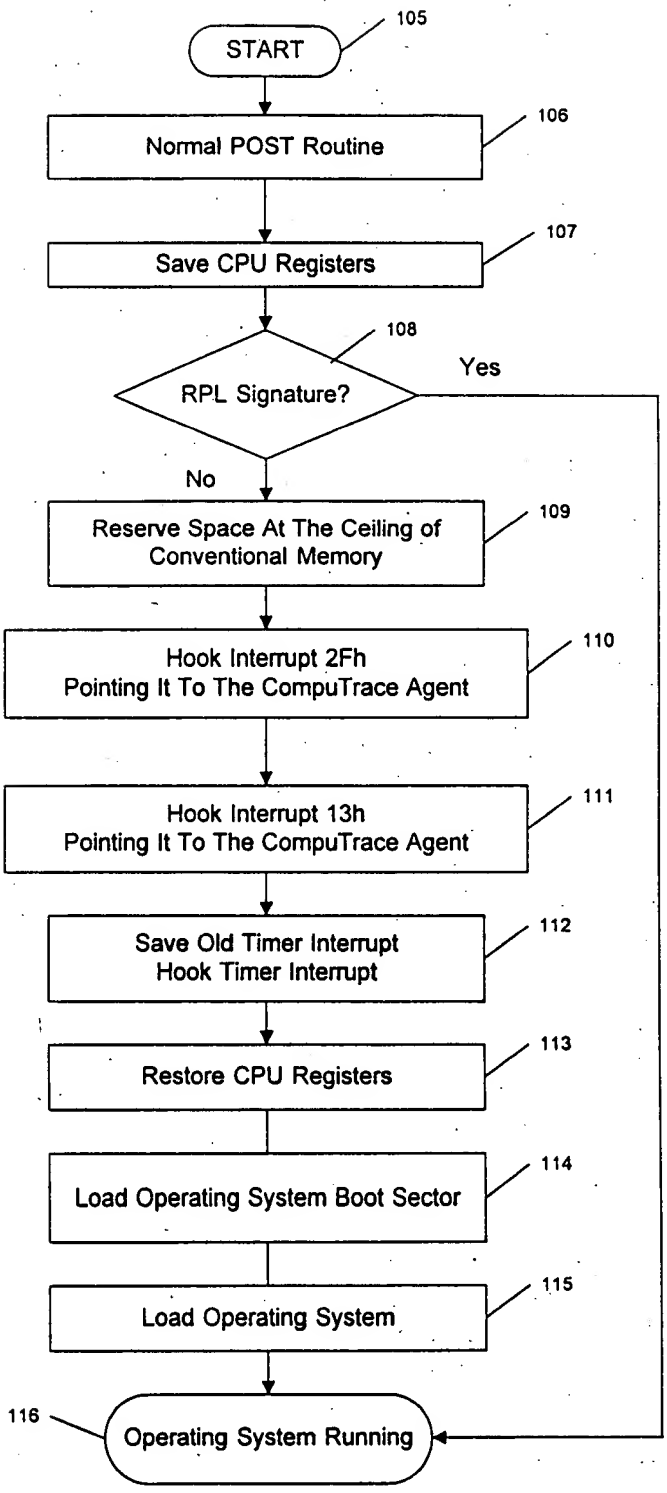

START
105
Normal POST Routine
106
Save CPU Registers
107
RPL Signature?
108
Yes
No
Reserve Space At The Ceiling of Conventional Memory
109
Hook Interrupt 2Fh Pointing It To The CompuTrace Agent
110
Hook Interrupt 13h Pointing It To The CompuTrace Agent
111
Save Old Timer Interrupt Hook Timer Interrupt
112
Restore CPU Registers
113
Load Operating System Boot Sector
114
Load Operating System
115
Operating System Running
116

FIG.14F

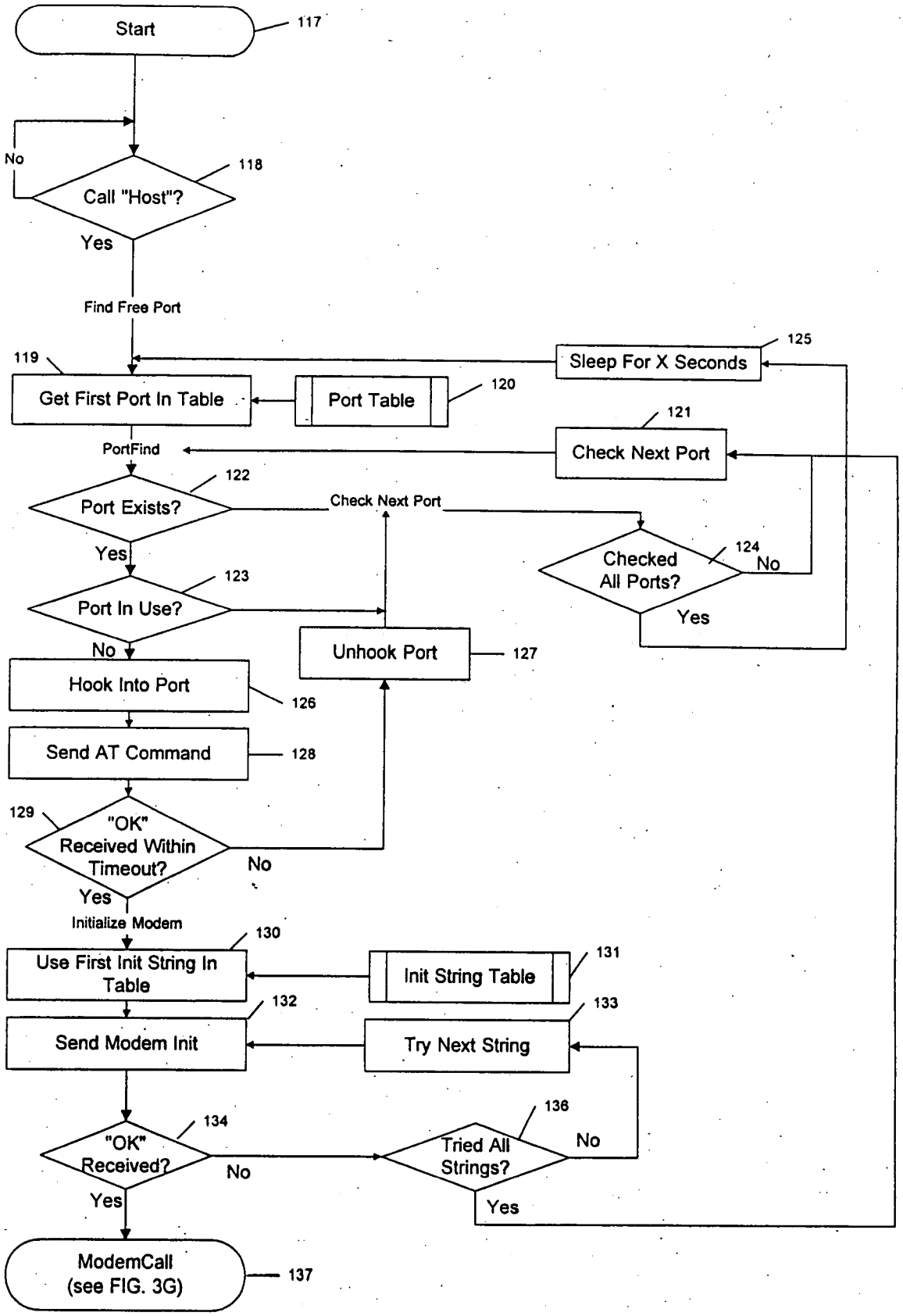

Start
117
No
Call "Host"?
118
Yes
Find Free Port
119
Get First Port In Table
Port Table
120
Sleep For X Seconds
125
121
Check Next Port
PortFind
122
Port Exists?
Check Next Port
Yes
123
Port In Use?
No
Checked All Ports?
124
No
Yes
Unhook Port
127
Hook Into Port
126
Send AT Command
128
129
"OK" Received Within Timeout?
No
Yes
Initialize Modem
130
Use First Init String In Table
Init String Table
131
132
Send Modem Init
Try Next String
133
134
"OK" Received?
No
136
Tried All Strings?
No
Yes
Yes
ModemCall (see FIG. 3G)
137

FIG.14F1
Detailed "Agent" Work Cycle

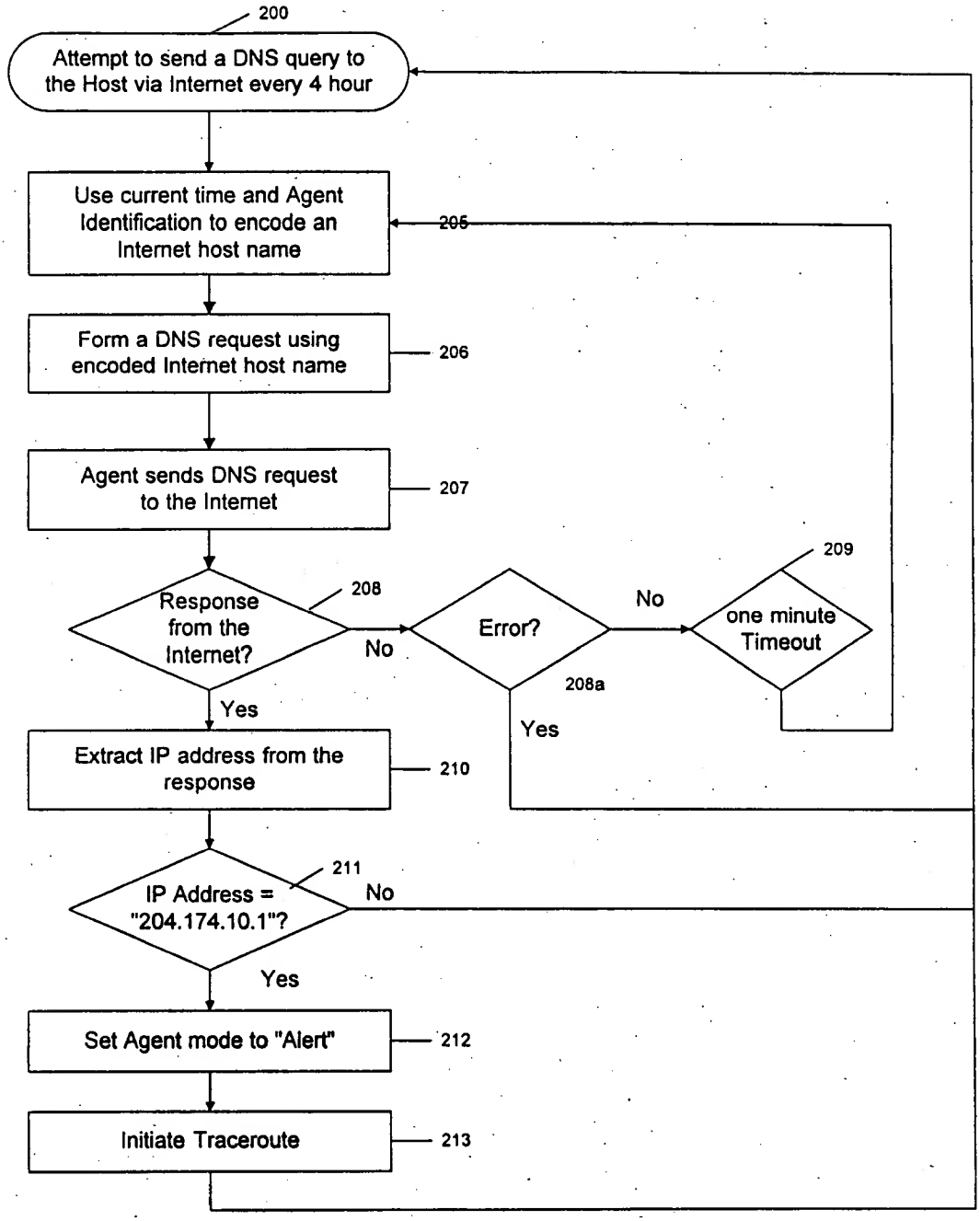


FIG.14G

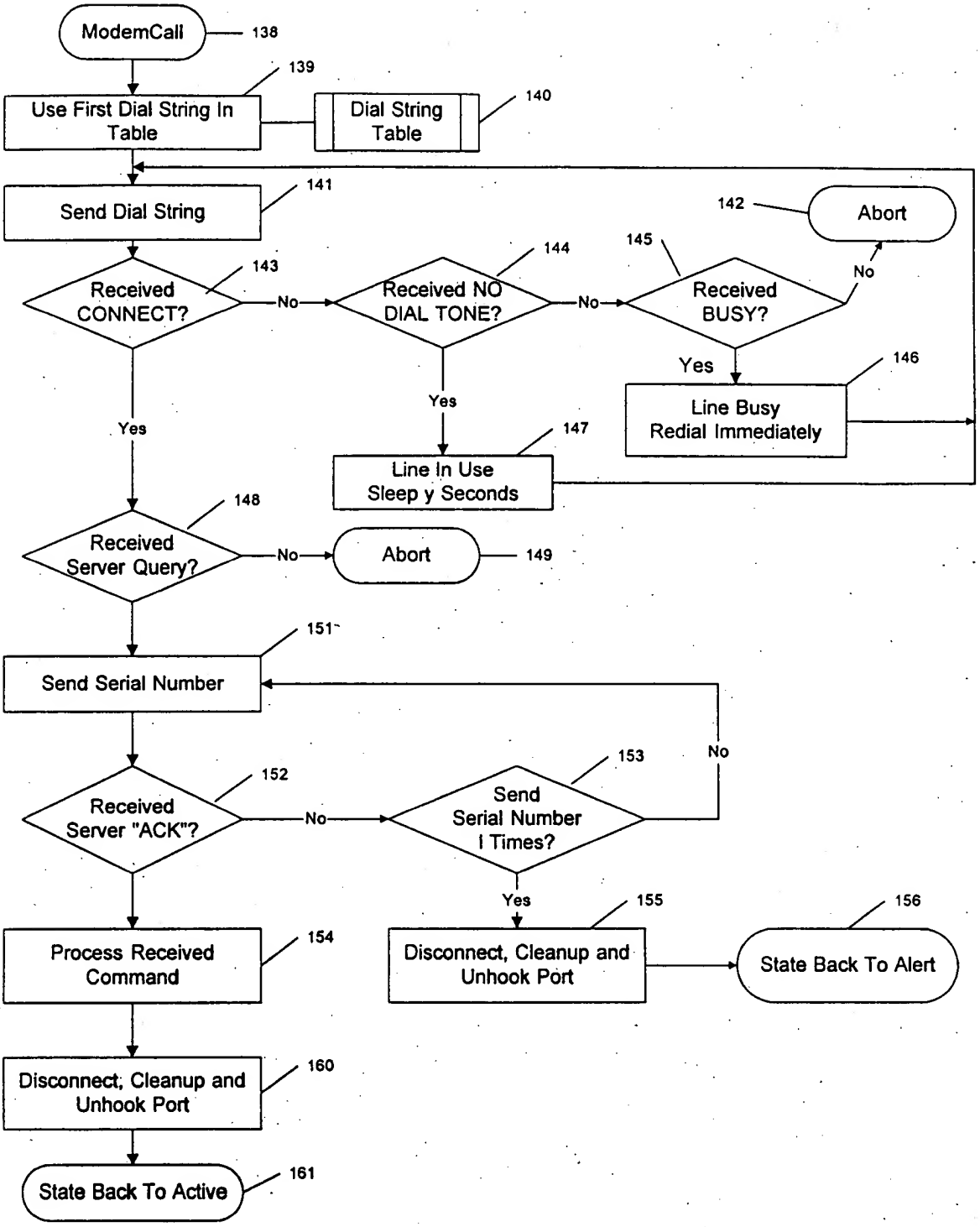

ModemCall
138
Use First Dial String In Table
139
Dial String Table
140
Send Dial String
141
Abort
142
Received CONNECT?
143
No
Received NO DIAL TONE?
144
No
Received BUSY?
145
No
Yes
Line Busy Redial Immediately
146
Yes
Line In Use Sleep y Seconds
147
Yes
Received Server Query?
148
No
Abort
149
Send Serial Number
151
Received Server "ACK"?
152
No
Send Serial Number I Times?
153
No
Yes
Disconnect, Cleanup and Unhook Port
155
State Back To Alert
156
Process Received Command
154
Disconnect, Cleanup and Unhook Port
160
State Back To Active
161

FIG. 14H

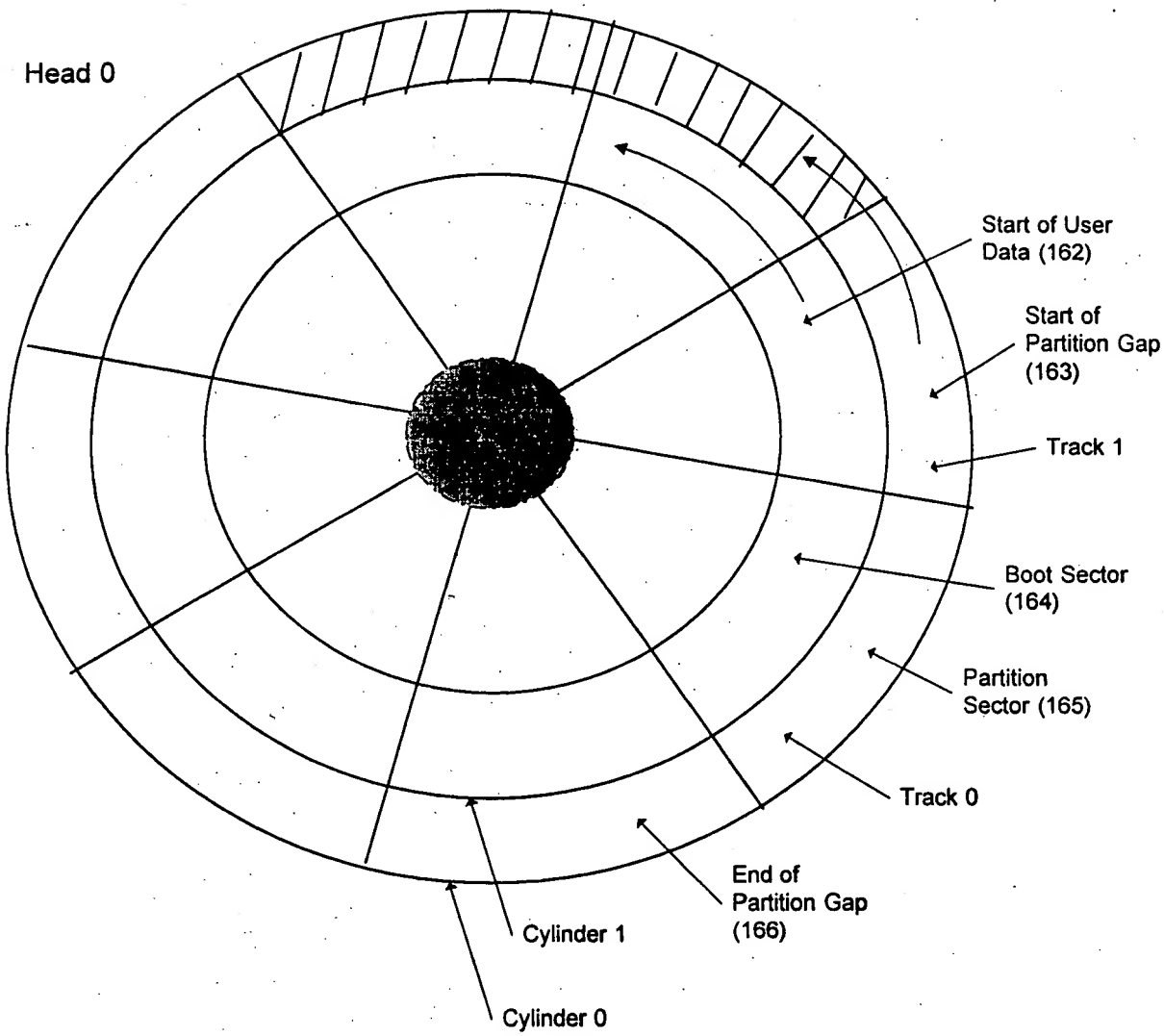

Head 0
Start of User Data (162)
Start of Partition Gap (163)
Track 1
Boot Sector (164)
Partition Sector (165)
Track 0
End of Partition Gap (166)
Cylinder 1
Cylinder 0
Agent Code

FIG. 15

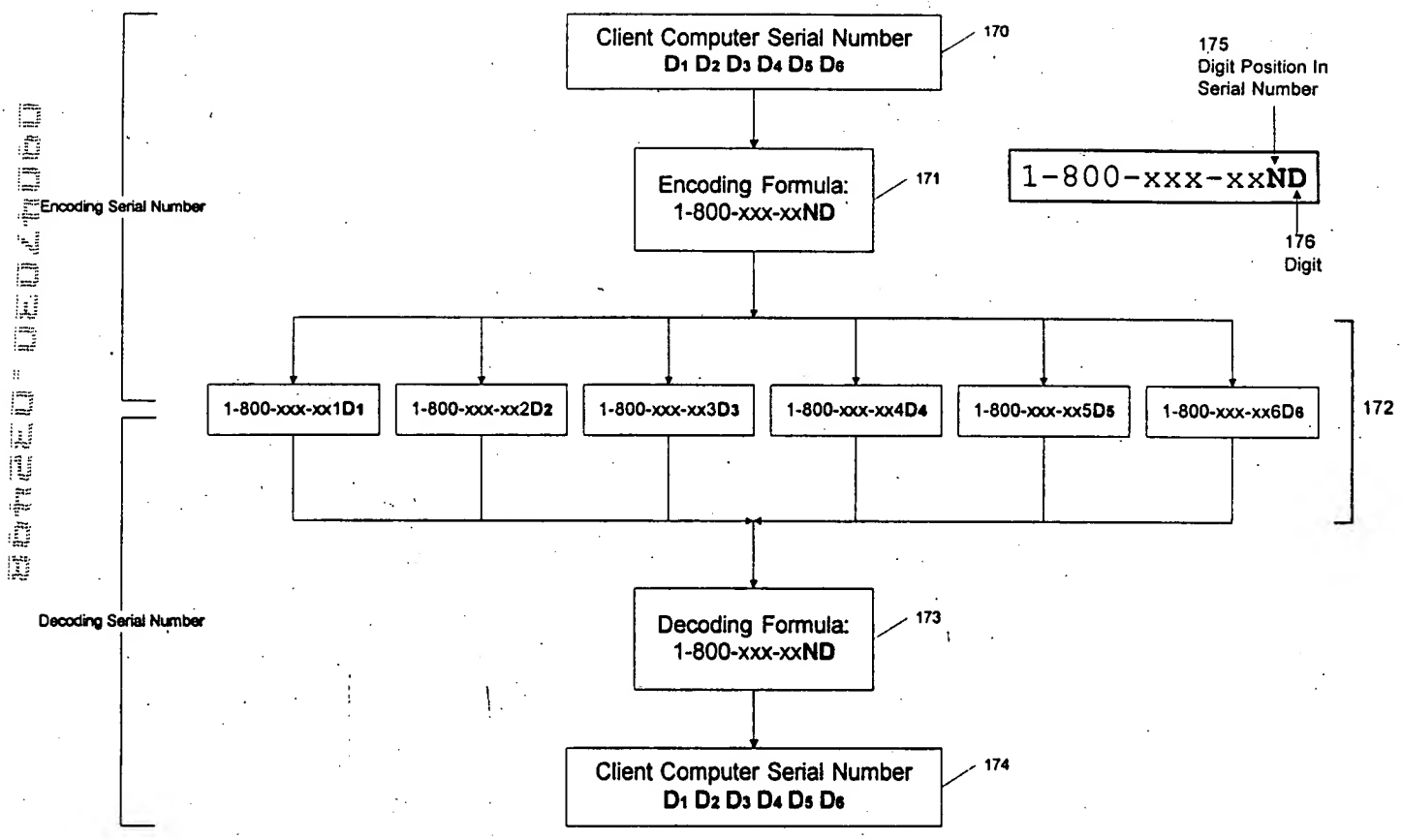
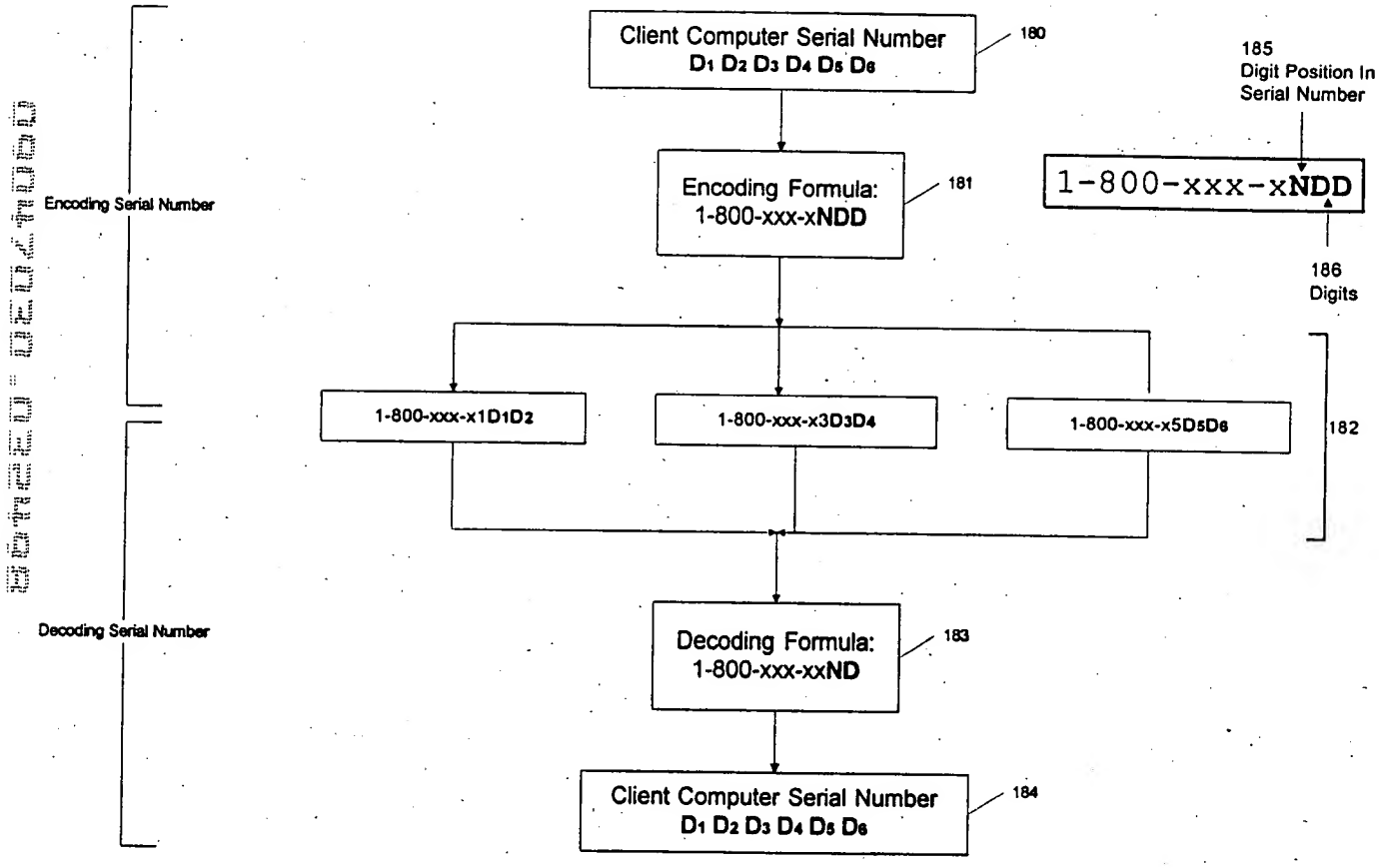

Client Computer Serial Number
D1 D2 D3 D4 D5 D6
170
175
Digit Position In
Serial Number
Encoding Formula:
1-800-xxx-xxND
171
1-800-xxx-xxND
176
Digit
Encoding Serial Number
1-800-xxx-xx1D1
1-800-xxx-xx2D2
1-800-xxx-xx3D3
1-800-xxx-xx4D4
1-800-xxx-xx5D5
1-800-xxx-xx6D6
172
Decoding Formula:
1-800-xxx-xxND
173
Decoding Serial Number
Client Computer Serial Number
D1 D2 D3 D4 D5 D6
174

FIG. 15A


Client Computer Serial Number
D1 D2 D3 D4 D5 D6
180
185
Digit Position In
Serial Number
Encoding Formula:
1-800-xxx-xNDD
181
1-800-xxx-xNDD
186
Digits
Encoding Serial Number
1-800-xxx-x1D1D2
1-800-xxx-x3D3D4
1-800-xxx-x5D5D6
182
Decoding Formula:
1-800-xxx-xxND
183
Client Computer Serial Number
D1 D2 D3 D4 D5 D6
184
Decoding Serial Number

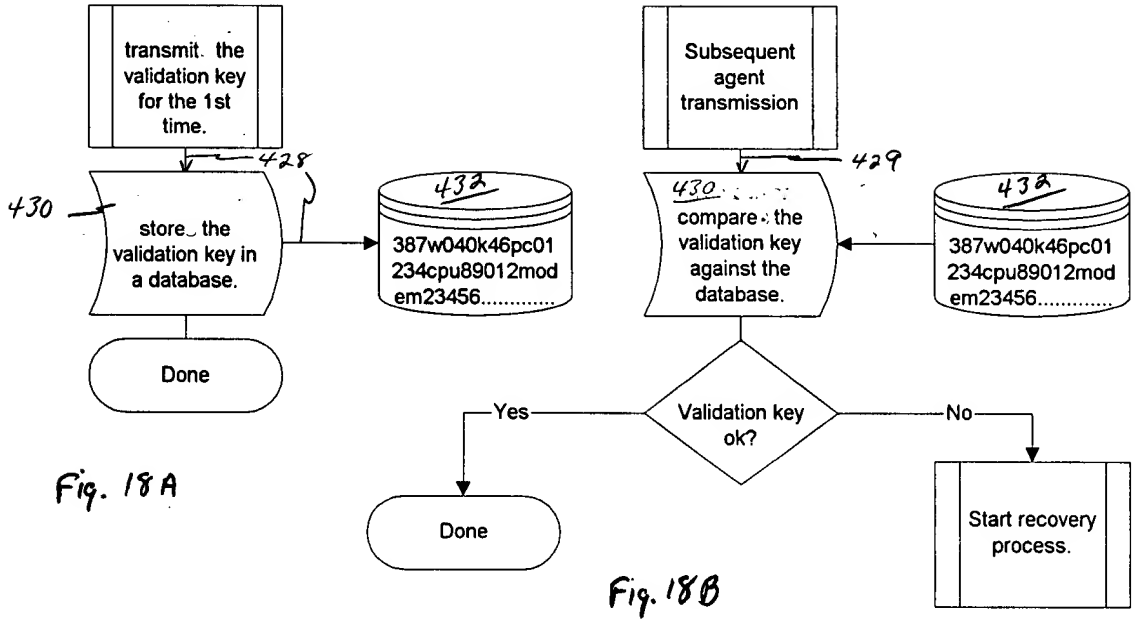


Fig. 18A

Fig. 18B

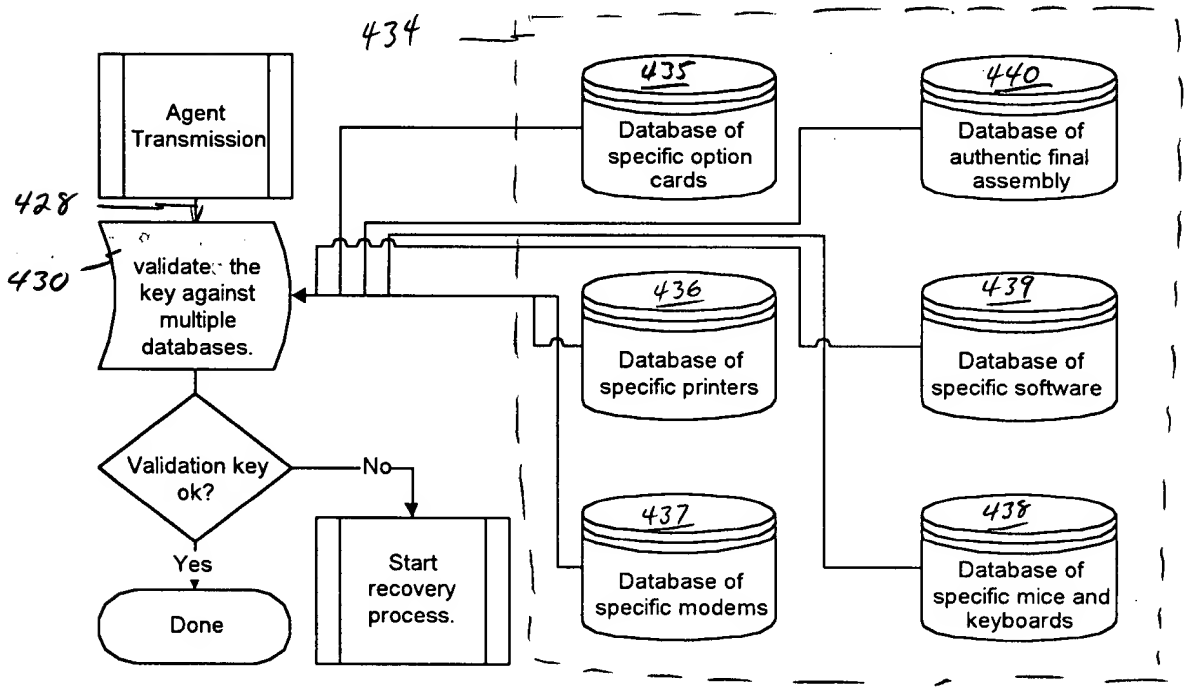


Fig. 19

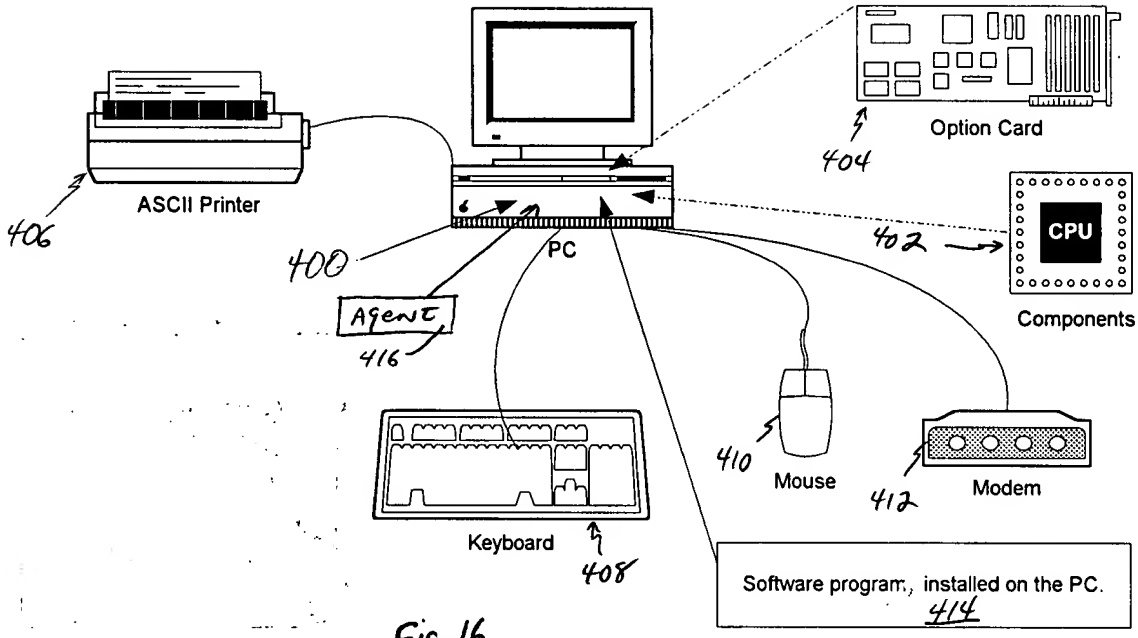


Fig 16

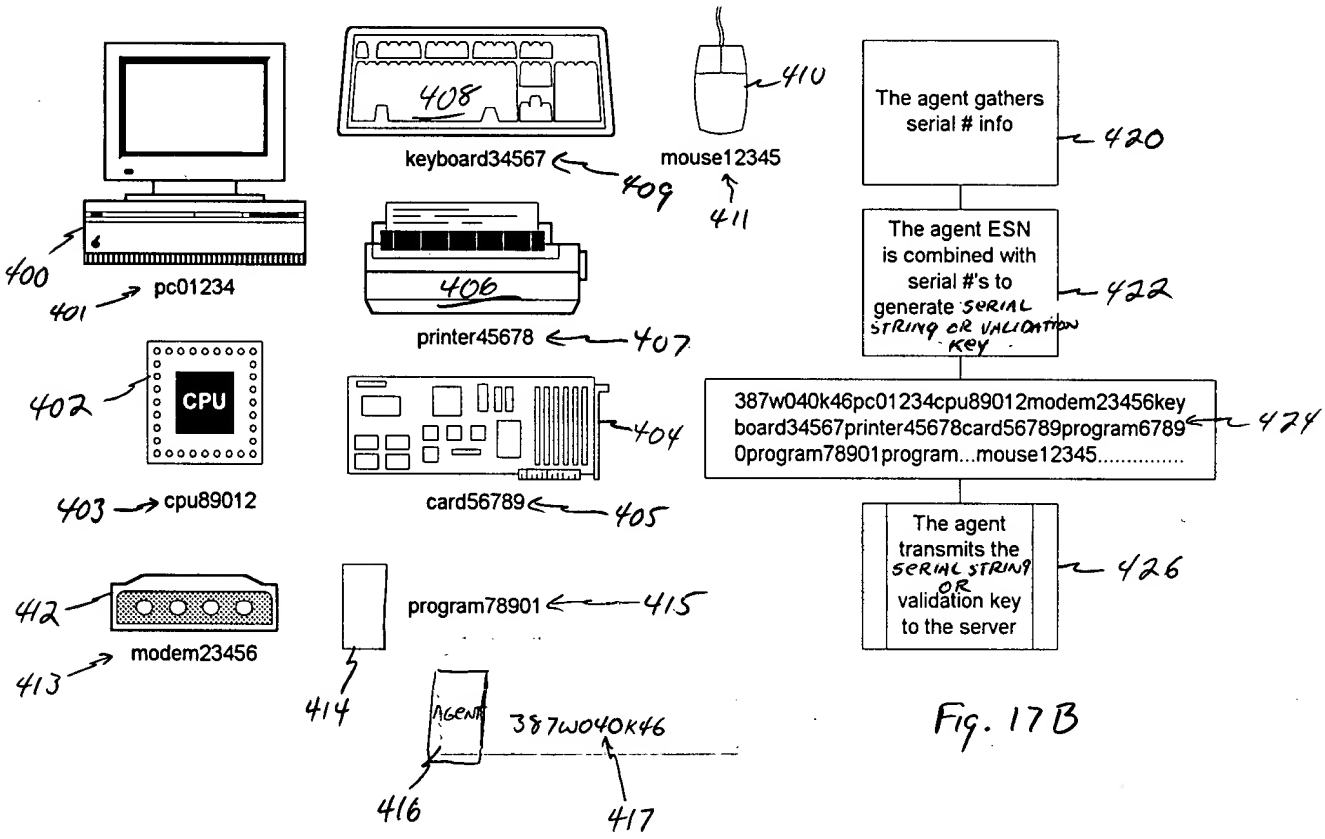


Fig. 17B

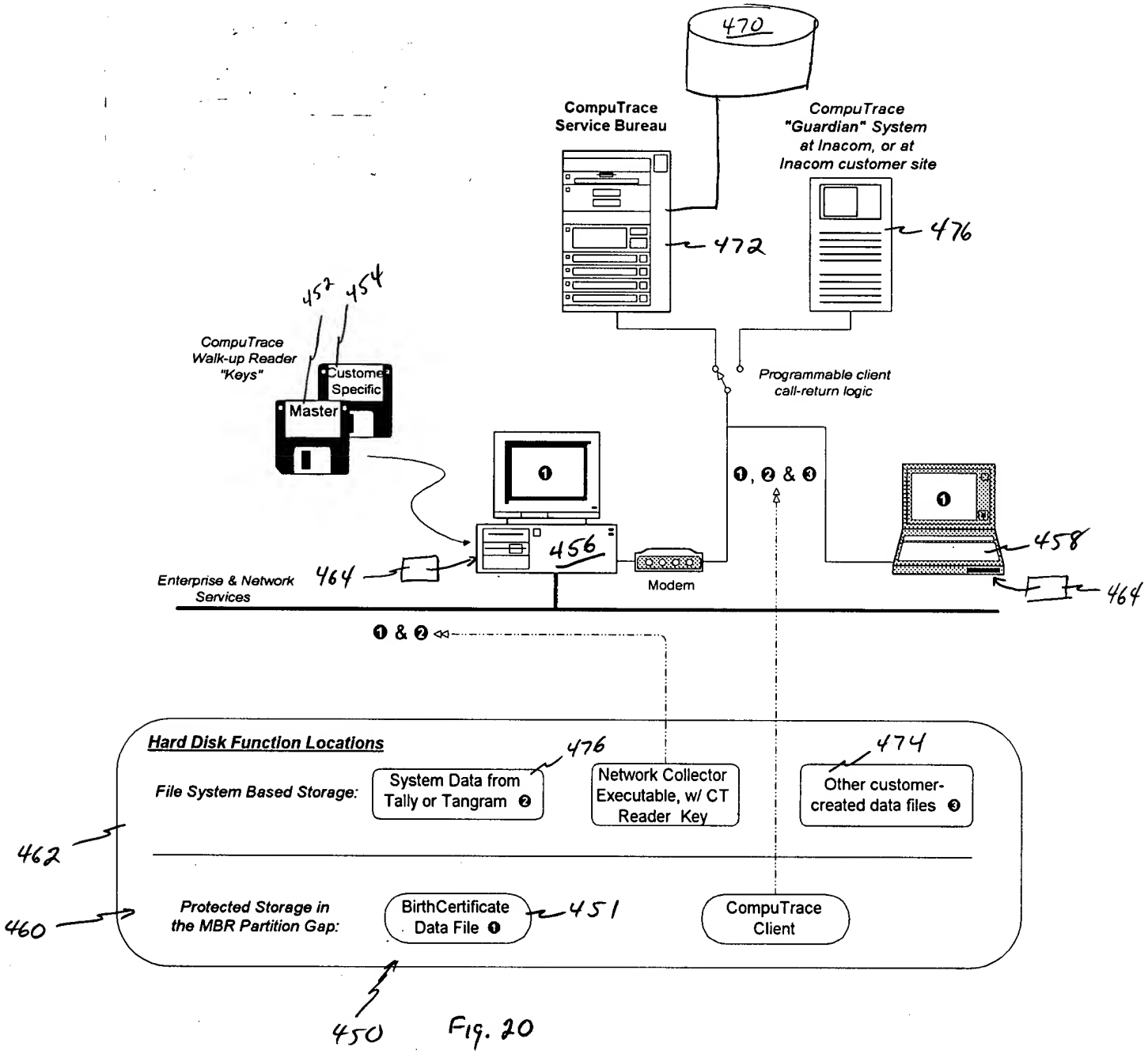

470
CompuTrace Service Bureau
CompuTrace "Guardian" System at Inacom, or at Inacom customer site
472
476
452
454
CompuTrace Walk-up Reader "Keys"
Custome Specific
Master
Programmable client call-return logic
1
1, 2 & 3
456
458
464
Enterprise & Network Services
Modem
1 & 2
Hard Disk Function Locations
File System Based Storage:
System Data from Tally or Tangram 2
476
Network Collector Executable, w/ CT Reader Key
474
Other customer-created data files 3
462
460
Protected Storage in the MBR Partition Gap:
BirthCertificate Data File 1
451
CompuTrace Client
450

Fig. 20

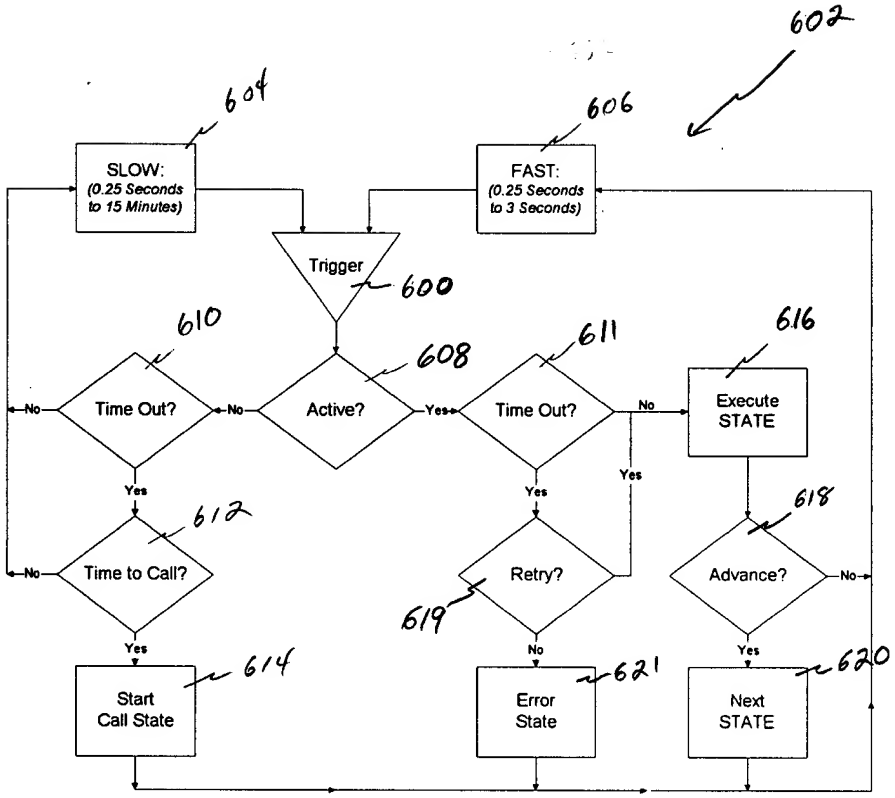

602
604
606
SLOW:
(0.25 Seconds
to 15 Minutes)
FAST:
(0.25 Seconds
to 3 Seconds)
Trigger
600
610
608
611
616
Time Out?
Active?
Time Out?
Execute
STATE
No
Yes
612
618
Time to Call?
Retry?
Advance?
619
Start
Call State
614
Error
State
621
Next
STATE
620

Fig. 21

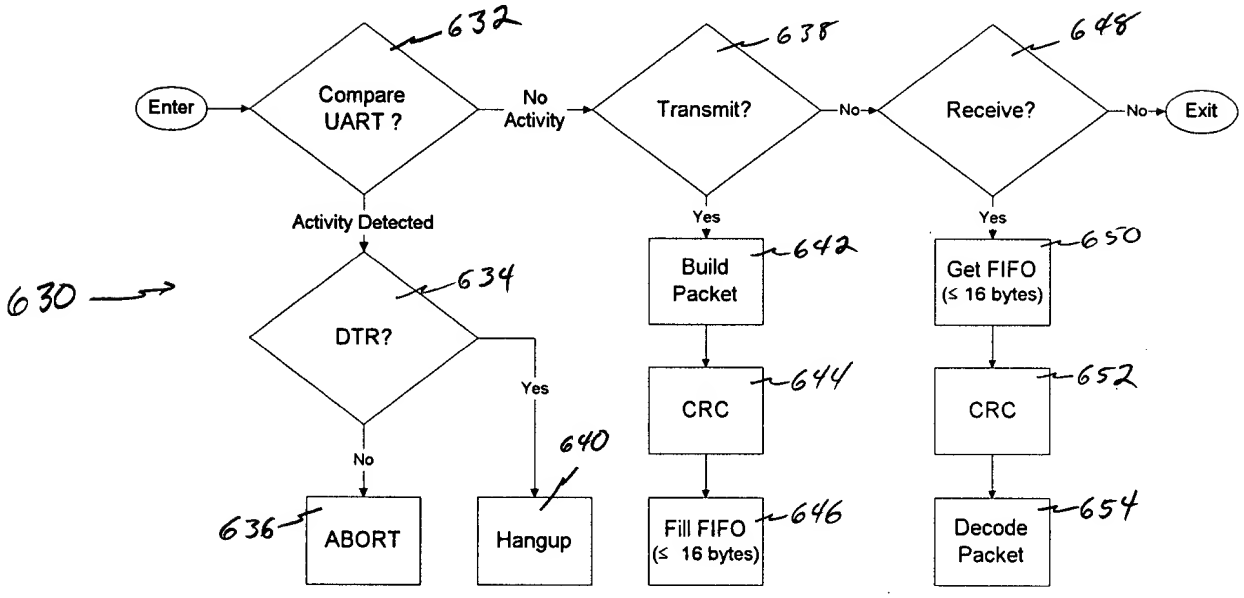

630
632
638
648
Enter
Compare
UART ?
No
Activity
Transmit?
Receive?
Exit
Activity Detected
634
642
650
DTR?
Build
Packet
Get FIFO
(≤ 16 bytes)
644
652
CRC
CRC
640
636
ABORT
Hangup
Fill FIFO
(≤ 16 bytes)
646
Decode
Packet
654

Fig. 22

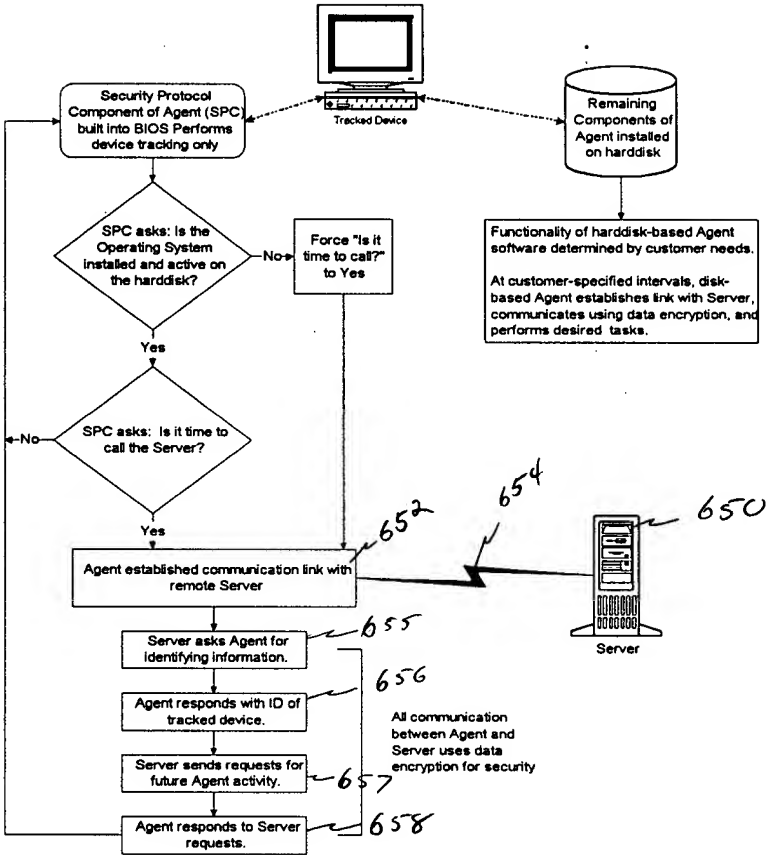

Tracked Device
Security Protocol Component of Agent (SPC) built into BIOS Performs device tracking only
Remaining Components of Agent installed on harddisk
SPC asks: Is the Operating System installed and active on the harddisk?
No
Force "Is it time to call?" to Yes
Functionality of harddisk-based Agent software determined by customer needs.
At customer-specified intervals, disk-based Agent establishes link with Server, communicates using data encryption, and performs desired tasks.
Yes
SPC asks: Is it time to call the Server?
No
Yes
652
654
650
Agent established communication link with remote Server
Server
655
Server asks Agent for identifying information.
656
Agent responds with ID of tracked device.
All communication between Agent and Server uses data encryption for security
Server sends requests for future Agent activity.
657
Agent responds to Server requests.
658

Fig. 23